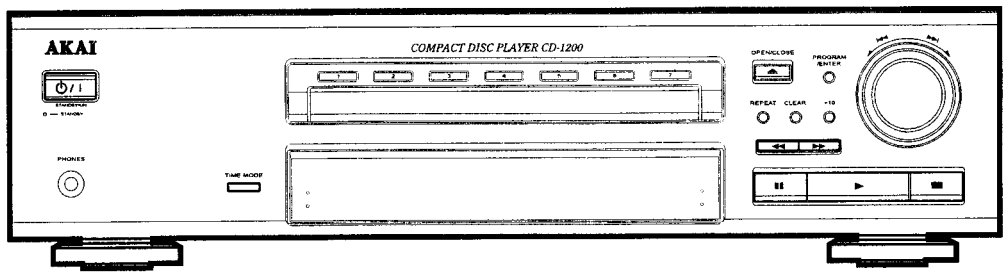
V20985

CD-M1200

AKAI SERVICE MANUAL



COMPACT DISC PLAYER

SPECIFICATIONS MODEL CD-M1200

Pick up	3 beam laser pick up
Pick up system	Linear tracking
Sampling frequence	44. 1kHz
Digital filter	16 bit, 8 time over sampling
D/A convertor	Delta sigma 1 bit D/A convertor
Error correction system	Cross Interleave Reed Solomon
Number of channels	2 channels stereo
Dynamic range	95dB
S/N	96dB
THD	0.009%
Wow & flutter	Less then measurable limits
Output level/Impedance	2.0V/560ohm
Power consumption	11W
Power supply	AC 230V, 50Hz [E/B/S] AC 230V/120V, 50~60Hz [U] AC 120V, 60Hz [U.S.A/CANADA]
Dimension (W×H×D)	430×111×330mm
Weight	5.6kg (net)

Standard accessories

Audio Signal connection cord	1
Remote control connection cord	1
Operator's manual	1
Remote control unit	1

* For improvement purposes, specifications and design are subject to change without notice.

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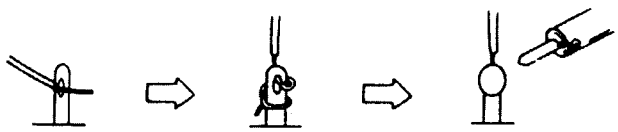
SAFETY INSTRUCTIONS

PRECAUTIONS DURING SERVICING

1. Parts indentified by the ⚠ (*)symbol are critical for safety. Replace them only with the parts number specified.
2. In addition to safety, other parts and assemblies are specified for conformance with such regulations as those applying to spurious radiation.
   These must also be replaced only with the specified replacements.
   Examples :RF converters, tuner units, antenna selector switches, RF cables, noise blocking capacitors, noise blocking filters, etc.
3. Use specified internal wiring. Note especially :
   1) Wires covered with PVC tubing
   2) Double insulated wires
   3) High voltage leads
4. Use specified insulating materials for hazardous live parts. Note especially:
   1) Insulation Tape
   2) PVC tubing
   3) Spacers(Insulating barriers)
   4) Insulation sheets for transistors
   5) Plastic screws for fixing microswitch (especially in turntable).
5. When replacing AC primary side components (transformers, power cords, noise blocking capacitors, etc.), wrap the ends of the wires securely about the terminals before soldering.



6. Make sure that wires do not contact heat producing parts (heatsinks, oxide metal film resistors, fusible resistors, etc.).
7. Check that replaced wires do not contact sharp edged or pointed parts.
8. Also check areas surrounding repaired locations.
9. Make sure that foreign objects (screws, solder droplets, etc.) do not remain inside the set.

SAFETY CHECK AFTER SERVICING

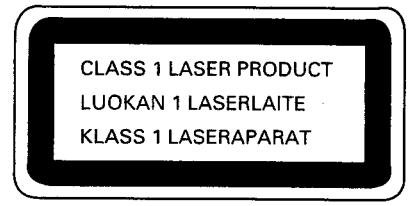
After servicing, make measurements of leakage-current or resistance in order to determine that exposed parts are acceptably insulated from the supply circuit.
The leakage-current measurement should be done between accessible metal parts (such as chassis, ground terminal, microphone jacks, signal input / output connectors, etc.) and the earth ground through a resistor of 1500 ohms paralleled with a 0.15 μF capacitor, under the unit's normal working conditions.The leakage-current should be less than 0.5mA rms AC.
The resistance measurement should be done between accessible exposed metalparts and power cord plug prongs with the power switch (if included) "ON". The resistance should be more than 2.2 Mohms.

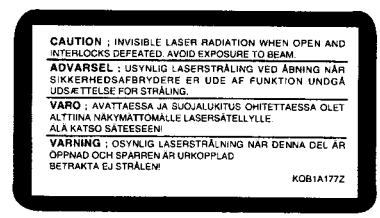
MAKE YOUR CONTRIBUTION TO PROTECT THE ENVIRONMENT

Used batteries with the ISO symbol for recycling as well as small accumulators (rechargeable batteries), mini-batteries (cells) and starter batteries should not be thrown into the garbage can.
Please leave them at an appropriate depot. All other household batteries can be thrown out with the household waste.

CLASS 1 LASER PRODUCT

This product contains a low power laser device.
To ensure continued safety, do not removo any covers or attempt to gain access to the inside of the product.
Refer any servicing to qualified personnel.
Use actual size stickers

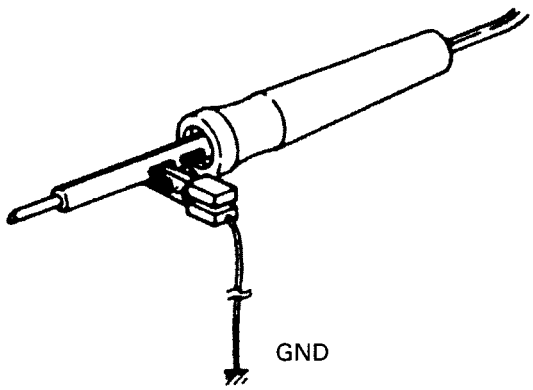



CAUTION ; INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.
ADVARSEL ; USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARO ; AVATTAESSA JA SUOJALUKITUS OHITETTAESSA OLET ALTTIINA NÄKYMÄTTOMÄLLE LASERSÄTELLYLLE ÄLÄ KATSO SÄTEESEEN!
VARNING ; OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRREN ÄR URKOPPLAD BETRAKTA EJ STRÅLEN!
KOB1A177Z

PRECAUTIONS IN REPAIRING

When repairing or adjusting the unit, please note the following points.

1. Do not put excessive pressure on the mechanical part (operation part), including the pick-up block, as extremely high mechanical precision is required in these parts.
2. When the base is removed for repair or adjustment, make sure that there are no metal obiects in the narrow gap between the P. C. board or the mecha parts and the base.
3. The Micro-Computer and the CD signal processing ICs can be damaged by static electricity or leakage from a soldering iron during repairing.
   While soldering, please take the precautions against leakage as in the illustration.



4. Do not loosen any screws in the pick-up block.
   When handing the pick-up block, please refer to the points to NOTE when replacing the pick-up block.
5. Keep safety for hazardous invisible Laser Radiation, DO NOT watch the Laser Beam (Objective lens) directly.
6. Models for the some countries, laser warning labels are affixed on the unit and inside of the unit, as shown below.
   Read it carefully for your safety, when repairing or adjusting the unit.

INFORMATION

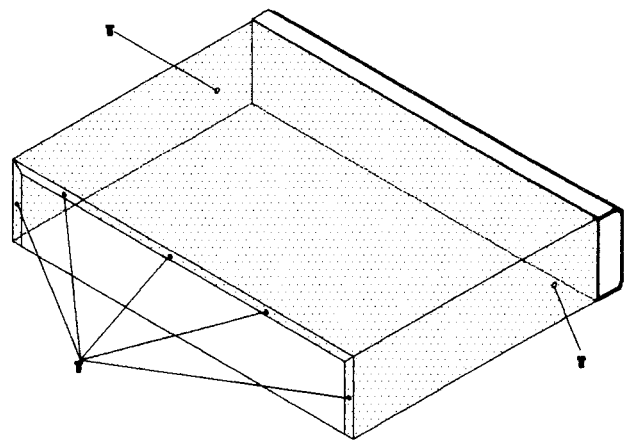
SYMBOLS FOR PRIMARY DESTINATION

Primary destination of units are indicated with the following alphabet.

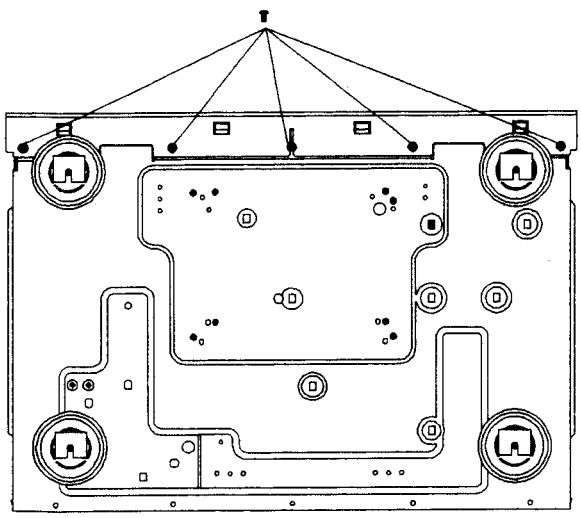
Symbols	Principal Destinations
B	UK
E	Europe (except UK)
S	Australia
U	Universal Area
Y*	Custom version

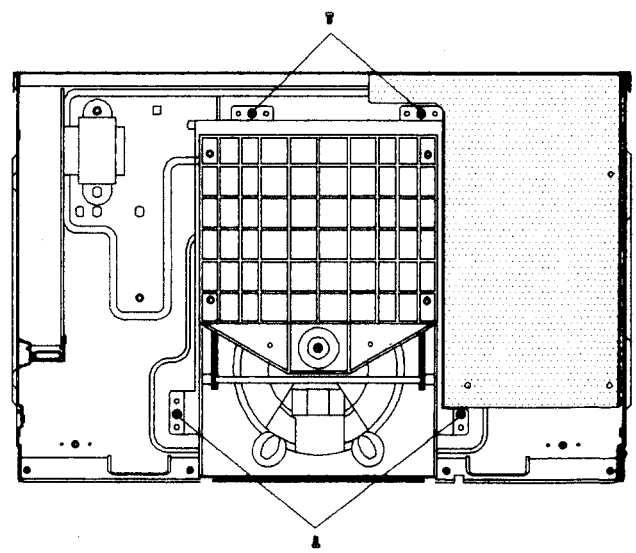
DISASSEMBLY

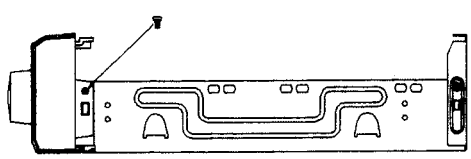
1)ROMOVAL OF TOP COVER



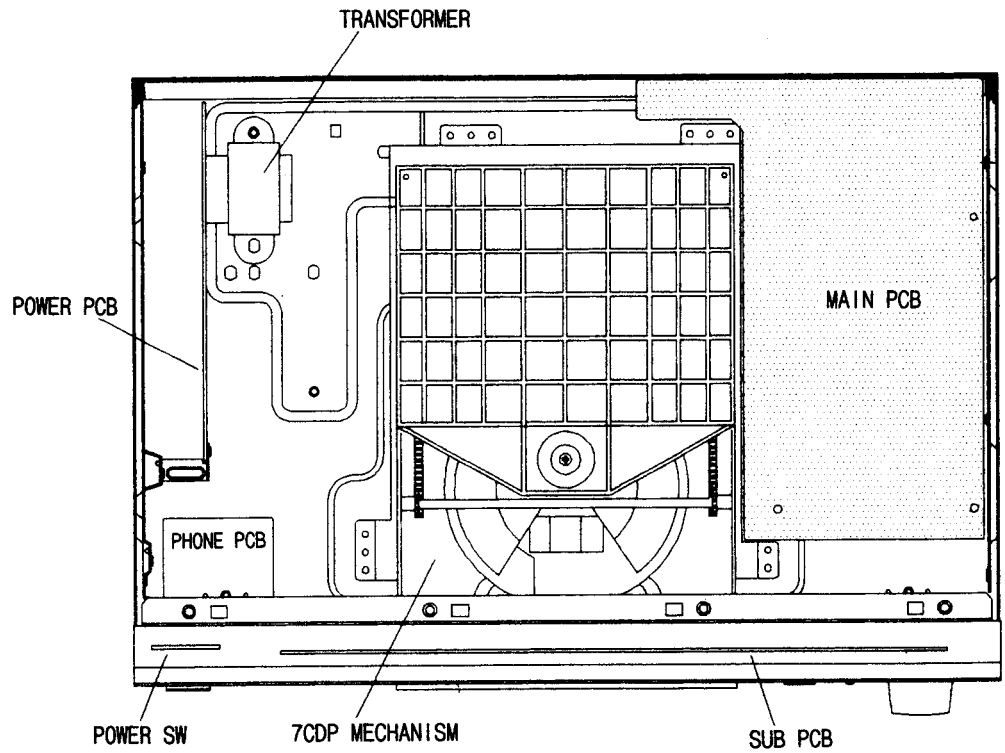
2)ROMOVAL OF FRONT PANEL







PRINCIPAL PARTS LOCATION



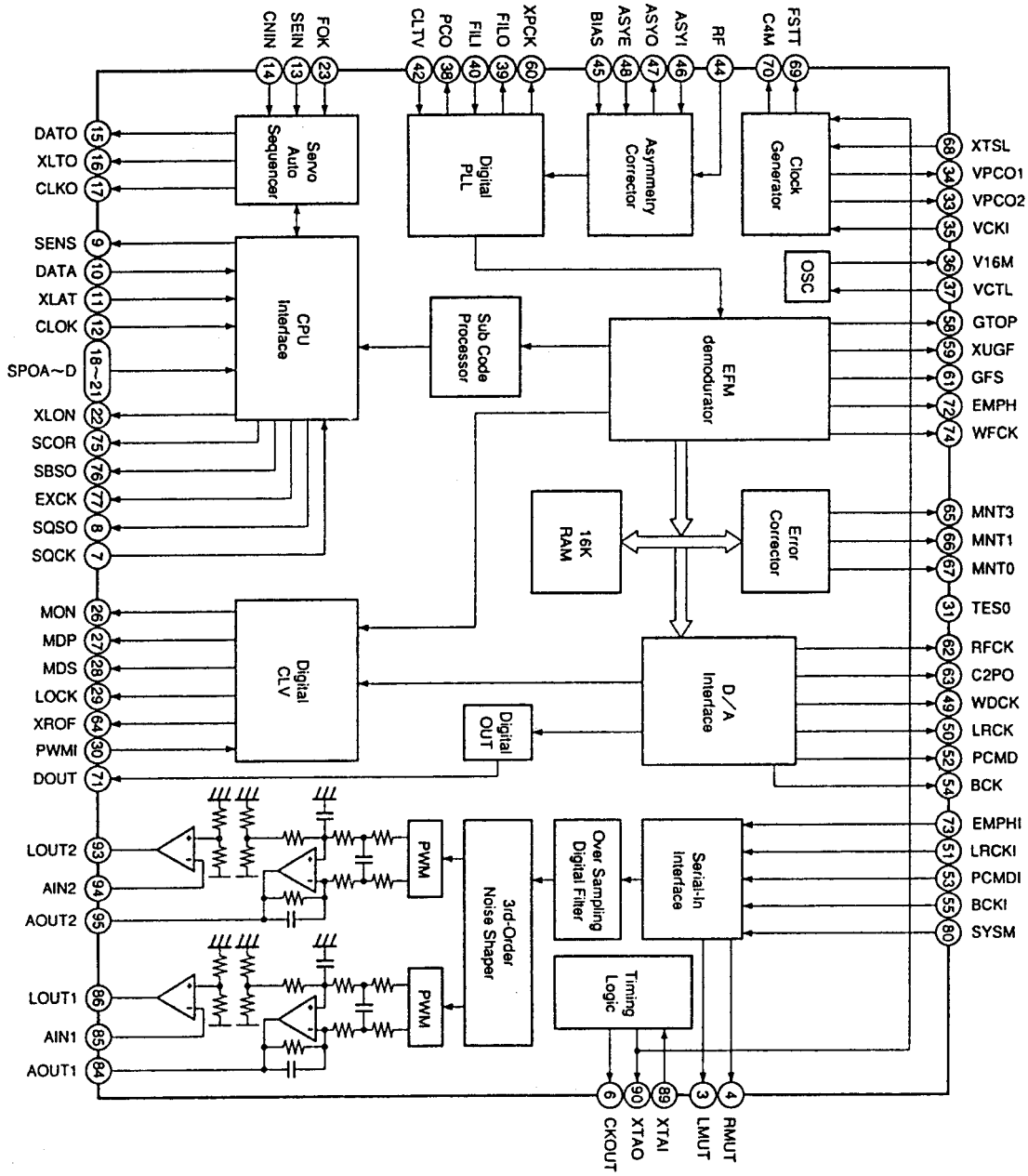
IC PIN FUNCTION

CXD2529Q (Digital Signal Processor)

No.	SYMBOL	I/O		DESCRIPTION
1	V_{DD}	—	—	Power supply (+5V).
2	V_{SS}	—	—	GND.
3	LMUT	O	1, 0	Left-channel zero detection flag.
4	RMUT	O	1, 0	Right-channel zero detection flag.
5	TES2	O	1, 0	TEST output pin; normally open.
6	CKOUT	O	1, 0	Master clock frequency-divider output. Selects and outputs XTAI × 1, × 1/2, × 1/4 or low only.
7	SQCK	I		SQSO readout clock input.
8	SQSO	O	1, 0	Sub Q 80-bit serial output.
9	SENS	O	1, 0	SENS output to CPU.
10	DATA	I		Serial data input from CPU.
11	XLAT	I		Latch input from CPU. Serial data is latched at the falling edge.
12	CLOK	I		Serial data transfer clock input from CPU.
13	SEIN	I		SENS input from SSP.
14	CNIN	I		Track jump count signal input.
15	DATO	O	1, 0	Serial data output to SSP.
16	XLTO	O	1, 0	Serial data latch output to SSP. Latched at the falling edge.
17	CLKO	O	1, 0	Serial data transfer clock output to SSP.
18	SPOA	I		Microcomputer extended interface (input A).
19	SPOB	I		Microcomputer extended interface (input B).
20	SPOC	I		Microcomputer extended interface (input C).
21	SPOD	I		Microcomputer extended interface (input D).
22	XLON	O	1, 0	Microcomputer extended interface (output).
23	FOK	I		Focus OK input. Used for SENS output and the servo auto sequencer.
24	V_{DD}	—	—	Power supply (+5V).
25	V_{SS}	—	—	GND.
26	MON	O	1, 0	Spindle motor on/off control output.
27	MDP	O	1, Z, 0	Spindle motor servo control.
28	MDS	O	1, Z, 0	Spindle motor servo control.
29	LOCK	O	1, 0	GFS is sampled at 460Hz; when GFS is high, this pin outputs a high signal. If GFS is low eight consecutive samples, this pin outputs low.
30	PWMI	I		Spindle motor external control input.
31	TES0	I		TEST pin; normally GND.
32	TES1	I		TEST pin; normally GND.
33	VPCO2	O	1, Z, 0	Wide-band EFM PLL charge pump output. Turned on/off by FCSW of address E
34	VPCO1	O	1, Z, 0	Charge pump output for wide-band EFM PLL.
35	VCKI	I		VCO2 oscillation input for the wide-band EFM PLL.
36	V16M	O	1, 0	VCO2 oscillation output for the wide-band EFM PLL.
37	VCTL	I		VCO2 control voltage input for the wide- band EFM PLL.
38	PCO	O	1, Z, 0	Master PLL charge pump output.
39	FILO	I	Analog	Master PLL (slave=digital PLL) filter output.
40	FILI	I		Master PLL filter input.
41	AV_{SS}	—	—	Analog GND.
42	CLTV	I		Master VCO control voltage input.
43	AV_{DD}	—	—	Analog power supply (+5V)
44	RF	I		EFM signal input.
45	BIAS	I		Constant current input of the asymmetry circuit.
46	ASYI	I		Asymmetry comparator voltage input.
47	ASYO	O	1, 0	EFM full-swing output (low = V_{SS}, high = V_{DD})
48	ASYE	I		Low: asymmetry circuit off; high: asymmetry circuit on.
49	WDCK	O	1, 0	D/A interface. Word clock f = 2fs
50	LRCK	O	1, 0	D/A interface. LR clock output f = fs
51	LRCKI	I		LR clock input.

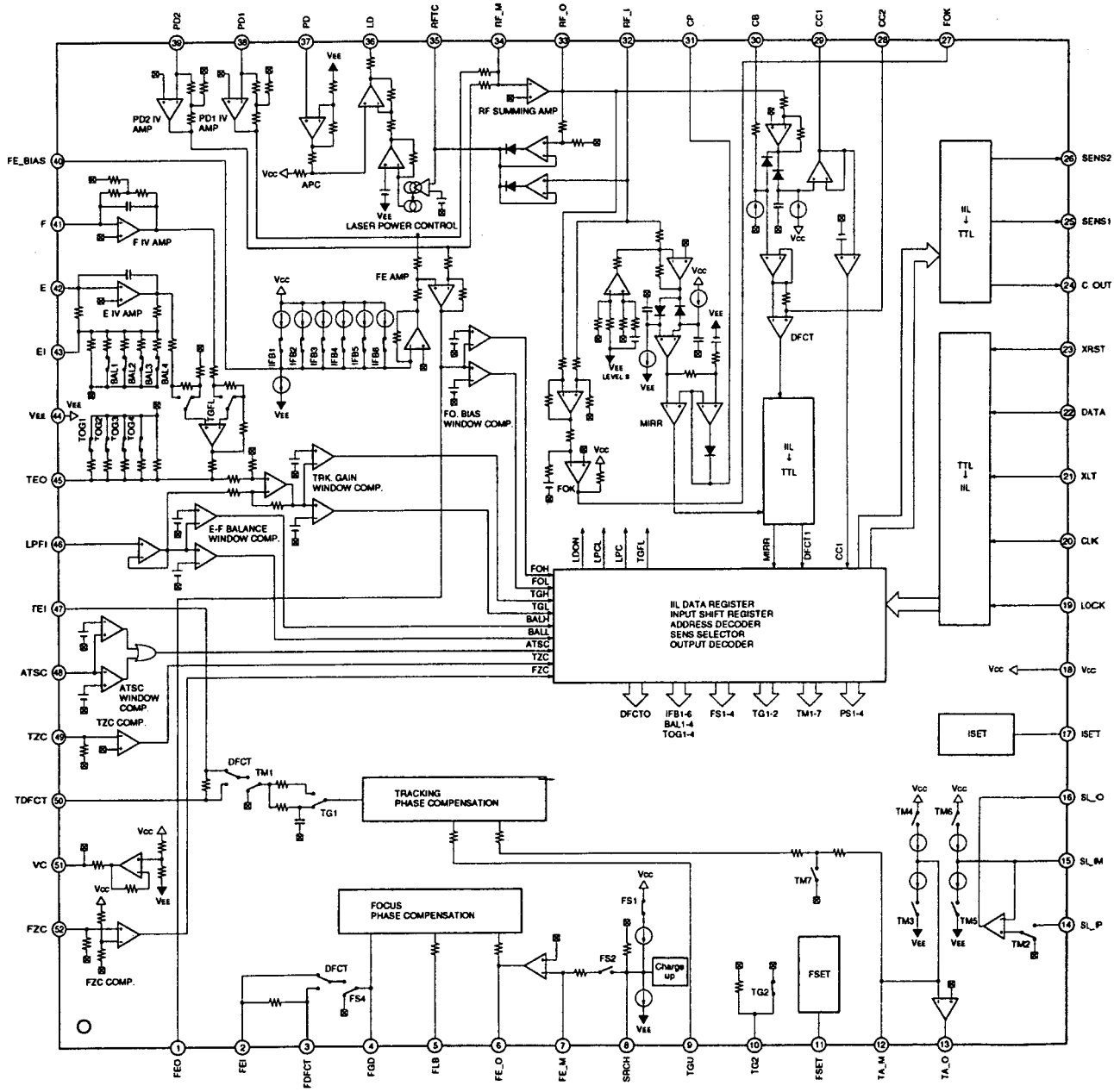
No.	SYMBOL	I/O		DESCRIPTION
52	PCMD	O	1, 0	D/A interface. Serial data output (two's complement, MSB first).
53	PCMDI	I		D/A interface. Serial data input (two's complement, MSB first).
54	BCK	O	1, 0	D/A interface. Bit clock output.
55	BCKI	I		D/A interface. Bit clock input.
56	VSS	—	—	GND.
57	VDD	—	—	Power supply (+5V).
58	GTOP	O	1, 0	GTOP output.
59	XUGF	O	1, 0	XUGF output.
60	XPCK	O	1, 0	XPLCK output.
61	GFS	O	1, 0	GFS output.
62	RFCK	O	1, 0	RFCK output.
63	C2PO	O	1, 0	C2PO output.
64	XROF	O	1, 0	XRAOF output.
65	MNT3	O	1, 0	MNT3 output.
66	MNT1	O	1, 0	MNT1 output.
67	MNT0	O	1, 0	MNT0 output.
68	XTSL	I		Crystal selector input. Low: 16.9344MHz; high: 33.8688MHz.
69	FSTT	O	1, 0	2/3 frequency-divider output for Pins 89 and 90.
70	C4M	O	1, 0	4.2336MHz output. 1/4 frequency-divided VCKI output in CAV-W mode.
71	DOUT	O	1, 0	Digital Out output.
72	EMPH	O	1, 0	Outputs a high signal when the playback disc has emphasis, and a low signal when there is no emphasis.
73	EMPHI	I		Inputs a high signal when de-emphasis is on, and a low signal when de-emphasis is off.
74	WFCK	O	1, 0	WFCK output.
75	SCOR	O	1, 0	Outputs a high signal when either subcode sync S0 or S1 is detected.
76	SBSO	O	1, 0	Sub P to W serial output.
77	EXCK	I		SBSO readout clock input.
78	VSS	—	—	GND.
79	VDD	—	—	Power supply (+5V).
80	SYSM	I		Mute input. Active when high.
81	NC			
82	AVSS	—	—	Analog GND.
83	AVDD	—	—	Analog power supply (+5V).
84	AOUT1	O		Left-channel analog output.
85	AIN1	I		Left-channel operational amplifier input.
86	LOUT1	O		Left-channel LINE output.
87	AVSS	—	—	Analog GND.
88	XVDD			Power supply for master clock.
89	XTAI	I		Crystal oscillation circuit input. Input the external master clock via this pin.
90	XTAO	O		Crystal oscillation circuit output.
91	XVSS			GND for master clock.
92	AVSS	—	—	Analog GND.
93	LOUT2	O		Right-channel LINE output.
94	AIN2	I		Right-channel operational amplifier input.
95	AOUT2	O		Right-channel analog output.
96	AVDD	—	—	Analog power supply (+5V).
97	AVSS	—	—	Analog GND.
98	NC			
99	NC			
100	XRST	I		System reset. Reset when low.

Notes)
- PCMD is an MSB first, two's complement output.
- GTOP is used to monitor the frame sync protection status. (High: sync protection window released)
- XUGF is the negative pulse for the frame sync derived from the EFM signal. It is the signal before sync protection.
- XPLCK is the inverse of the EFM PLL clock. The PLL is designed so that the falling edge of XPLCK and the EFM signal transition point coincide.
- GFS goes high when the frame sync and the insertion protection timing match.
- RFCK is derived with the crystal accuracy. This signal has a cycle of 136μs (during normal-speed).
- C2PO represents the data error status.
- XRAOF is generated when the 16K RAM exceeds the $\pm$4F jitter margin.


CNIN 14
SEIN 13
FOK 23
CLTV 42
PCO 38
FILI 40
FILO 39
XPCK 60
BIAS 45
ASYE 48
ASYO 47
ASYI 46
RF 44
C4M 70
FSTT 69
DATO 15
XLTO 16
CLKO 17
SENS 9
DATA 10
XLAT 11
CLOK 12
SPOA~D 18~21
XLON 22
SCOR 75
SBSO 76
EXCK 77
SQSO 8
SQCK 7
MON 26
MDP 27
MDS 28
LOCK 29
XROF 64
PWMI 30
DOUT 71
LOUT2 93
AIN2 94
AOUT2 95
LOUT1 86
AIN1 85
AOUT1 84
Servo Auto Sequencer
Digital PLL
Asymmetry Corrector
Clock Generator
CPU Interface
Sub Code Processor
EFM demodulator
OSC
16K RAM
Error Corrector
Digital CLV
Digital OUT
D/A Interface
PWM
PWM
3rd-Order Noise Shaper
Over Sampling Digital Filter
Timing Logic
Serial-in Interface
XTSL 68
VPCO1 34
VPCO2 33
VCKI 35
V16M 36
VCTL 37
GTOP 58
XUGF 59
GFS 61
EMPH 72
WFCK 74
MNT3 65
MNT1 66
MNT0 67
TES0 31
RFCK 62
C2PO 63
WDCK 49
LRCK 50
PCMD 52
BCK 54
EMPHI 73
LRCKI 51
PCMDI 53
BCKI 55
SYSM 80
CKOUT 6
XTAO 90
XTAI 89
LMUT 3
RMUT 4

CXA1992BR (RF AMP+Servo signal processor)

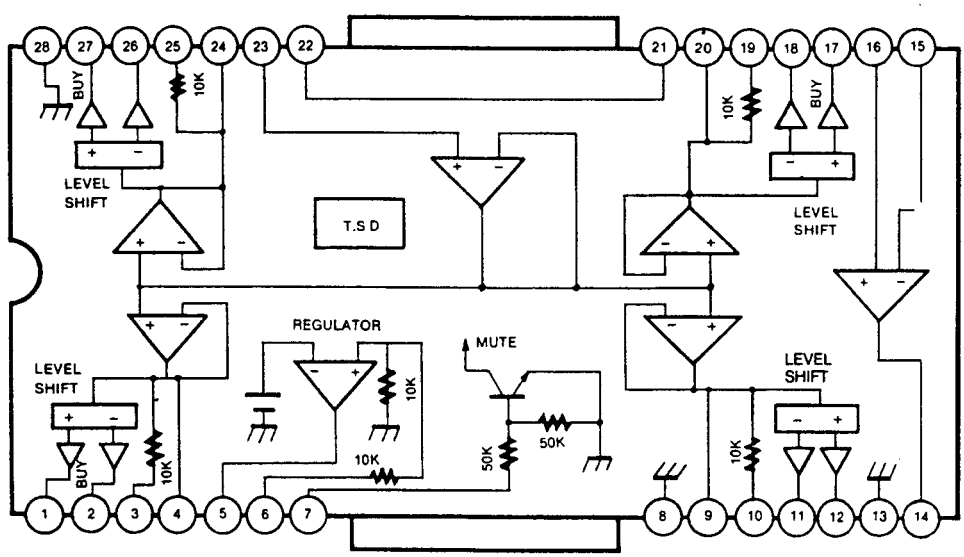
No.	SYMBOL	I/O	DESCRIPTION
1	FEO	O	Focus error amplifier output. Connected internally to the window comparator input for bias adjustment.
2	FEI	I	Focus error input.
3	FDFCT	I	Capacitor connection pin for defect time constant.
4	FGD	I	Ground this pin through a capacitor for cutting the focus servo high-frequency gain.
5	FLB	I	External time constant setting pin for boosting the focus servo low-frequency.
6	FE- O	O	Focus drive output.
13	TA- O	O	Tracking drive output.
16	SL- O	O	Sled drive output.
7	FE-M	I	Focus amplifier inverted input.
8	SRCH	I	External time constant setting pin for generating focus search waveform.
9	TGU	I	External time constant setting pin for switching tracking high-frequency gain.
10	TG2	I	External time constant setting pin for switching tracking high-frequency gain.
11	FSET	I	Peak frequency setting pin for focus and tracking phase compensation amplifier.
12	TA-M	I	Tracking amplifier inverted input.
14	SL-P	I	Sled amplifier non-inverted input.
15	SL-M	I	Sled amplifier inverted input.
17	ISET	I	Connect an external capacitance to set the current which determines the Focus search, Track jump, and Sled kick heights.
18	Vcc	I	Positive power supply.
19	LOCK	I	The sled overrun prevention circuit operates when this pin is Low. (no pull-up resistance)
20	CLK	I	Serial data transfer clock input from CPU. (no pull-up resistance)
22	DATA	I	Serial data input from CPU. (no pull-up resistance)
21	XLT	I	Latch input from CPU. (no pull-up resistance)
23	XRST	I	Reset input ; resets at Low. (no pull-up resistance)
24	C. OUT	O	Track number count signal output.
25	SENS1	O	Outputs FZC, DFCT1, TZC, BALH, TGH, FOH, ATSC, and others according to the command from CPU.
26	SENS2	O	Outputs DFCT2, MIRR, BALL, TGL, FOL, and others according to the command from the CPU.
27	FOK	O	Focus OK comparator output.
28	CC2	I	Input for the defect bottom hold output with capacitance coupled.
29	CC1	O	Defect bottom hold output. Connected internally to the interruption comparator input.
30	CB	I	Connection pin for defect bottom hold capacitor.
31	CP	I	Connection pin for MIRR hold capacitor. MIRR comparator non-inverted input.
32	RF- I	I	Input for the RF summing amplifier output with capacitance coupled.
33	RF- O	O	RF summing amplifier output. Eyepattern check point.
34	RF- M	I	RF summing amplifier inverted input. The RF amplifier gain is determined by the resistance connected between this pin and RFO pin.
35	RFTC	I	External time constant setting pin during RF level control.
36	LD	O	APC amplifier output.
37	PD	I	APC amplifier input.
38	PD1	I	RE I-V amplifier inverted input.
39	PD2	I	Connect these pins to the photo diode A+C and B+D pins.
40	FE- BIAS	I	Bias adjustment of focus error amplifier. Leave this pin open for automatic adjustment.
41	F	I	F I-V and EI -V amplifier inverted input.
42	E	I	Connect these pins to photo diodes F and E.
43	EI	—	I-V amplifier E gain adjustment. (When not using automatic balance adjustment)
44	VEE	—	Negative power supply.
45	TEO	O	Tracking error amplifier output. E-F signal is output.
46	LPFI	I	Comparator input for balance adjustment. (input from TEO through LPF)
47	TEI	I	Tracking error input.
50	TDFCT	I	Capacitor connection pin for defect time constant.
48	ATSC	I	Window comparator input for ATSC detection.
49	TZC	I	Tracking zero-cross comparator input.
51	VC	O	(Vcc+VEE)/2 direct voltage output.
52	FZC	I	Focus zero-cross comparator input.


PD2
PD1
PD
LD
RFTC
RF_M
RF_O
RF_I
CP
CB
CC1
CC2
FOK
PD2 IV AMP
PD1 IV AMP
RF SUMMING AMP
APC
LASER POWER CONTROL
FE_BIAS
F
F IV AMP
E
E IV AMP
EI
FE AMP
IFB1
IFB2
IFB3
IFB4
IFB5
IFB6
BAL1
BAL2
BAL3
BAL4
TGFL
TOG1
TOG2
TOG3
TOG4
FO. BIAS WINDOW COMP.
LEVEL S
MIRR
DFCT
FOK
IIL ↓ TTL
TTL ↓ IIL
SENS2
SENS1
C OUT
XRST
DATA
XLT
CLK
LOCK
TEO
TRK. GAIN WINDOW COMP.
E-F BALANCE WINDOW COMP.
LPFI
TEI
ATSC
ATSC WINDOW COMP.
TZC COMP.
TZC
TDFCT
VC
FZC
FZC COMP.
LDON
LPCL
LPC
TGFL
FOH
FOL
TGH
TGL
BALH
BALL
ATSC
TZC
FZC
IIL DATA REGISTER
INPUT SHIFT REGISTER
ADDRESS DECODER
SENS SELECTOR
OUTPUT DECODER
DFCTO
IFB1-6
BAL1-4
TOG1-4
FS1-4
TG1-2
TM1-7
PS1-4
ISET
Vcc
TM1
TG1
TRACKING PHASE COMPENSATION
FOCUS PHASE COMPENSATION
TM7
TM4
TM6
TM3
TM5
TM2
SL_O
SL_M
SL_P
FS1
FS2
Charge up
FS4
TG2
FSET
FEO
FEI
FDFCT
FGD
FLB
FE_O
FE_M
SRCH
TGU
TA_M
TA_O

KA9258D (Motor Driver)

No.	SYMBOL	I/O	DESCRIPTION
1	DO1.1	O	DRIVE OUTPUT
2	DO1.2	O	DRIVE OUTPUT
3	DI1.1	I	DRIVE INPUT
4	DI1.2	I	DRIVE INPUT
5	REG		REGULATOR
6	REO	O	REGULATOR OUTPUT
7	MUTE		MUTE
8	GND1		GROUND
9	DI2.1	I	DRIVE INPUT
10	DI2.2	I	DRIVE INPUT
11	DO2.1	O	DRIVE OUTPUT
12	DO2.2	O	DRIVE OUTPUT
13	GND2		GROUND
14	OPOUT	O	OPAMP OUTPUT
15	OPIN (-)	I	OPAMP INPUT(-)
16	OPIN (+)	I	OPAMP INPUT(+)
17	DO3.1	O	DRIVE OUTPUT
18	DO3.2	O	DRIVE OUTPUT
19	DI3.1	I	DRIVE INPUT
20	DI3.2	I	DRIVE INPUT
21	VCC1		SUPPLY VOLTAGE
22	VCC2		SUPPLY VOLTAGE
23	VREF		2.5V BIAS VOLTAGE
24	DI4.1	I	DRIVE INPUT
25	DI4.2	I	DRIVE INPUT
26	DO4.1	O	DRIVE OUTPUT
27	DO4.2	O	DRIVE OUTPUT
28	GND 3		GROUND

BLOCK DIAGRAM



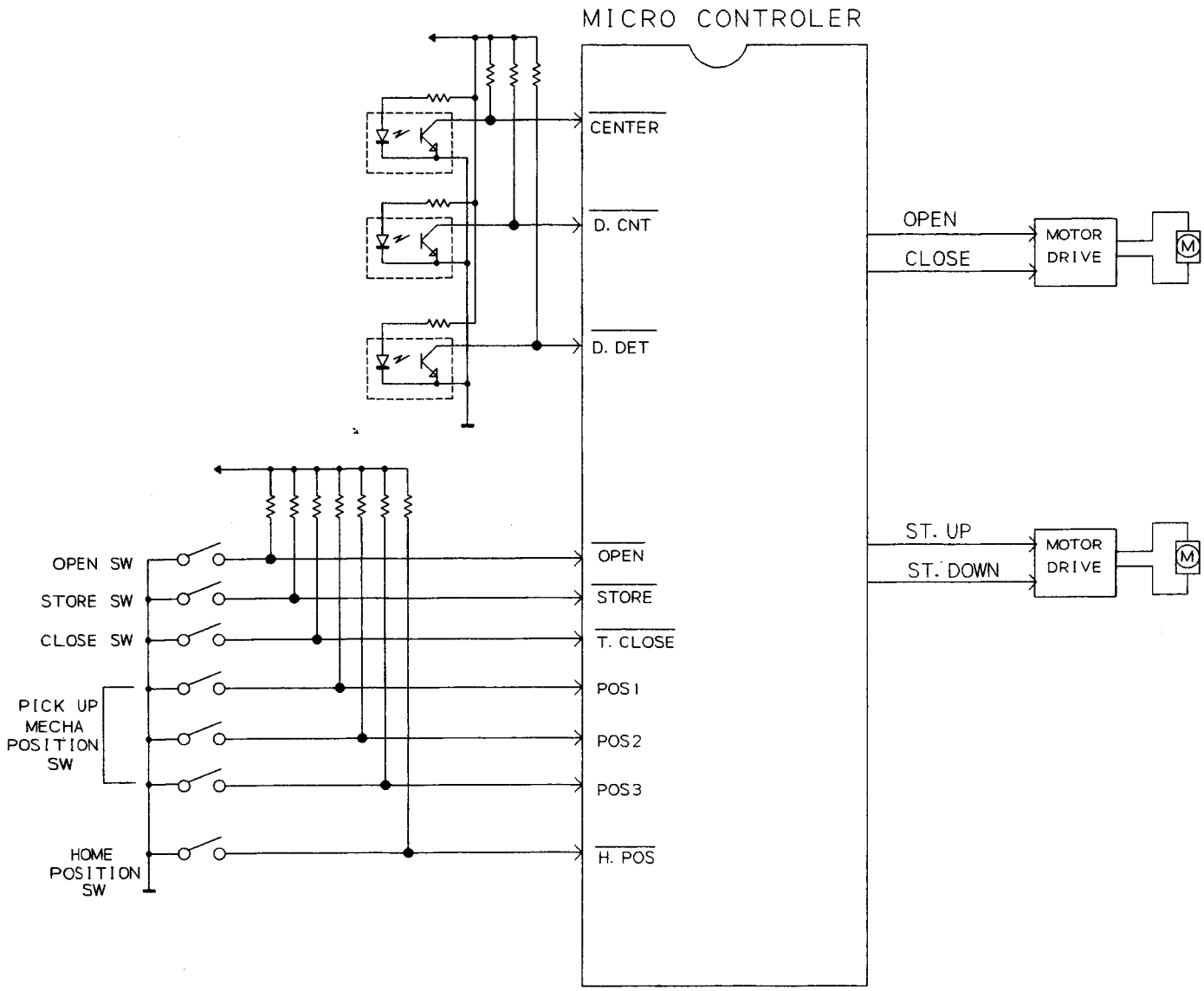
MECHA SENSOR

NO.	SENSOR NAME	KIND	DESCRIPTION
1	$\overline{\text{OPEN}}$	MECHANICAL SW	"L" when the tray has opened.
2	$\overline{\text{STORE}}$	MECHANICAL SW	"L" when the tray is closed and the carriage is in the stocker.
3	$\overline{\text{T. CLOSE}}$	MECHANICAL SW	"L" when the tray is closed.
4	POS1	MECHANICAL SW	Sensor detecting the position of Pick-up Mecha.
5	POS2	MECHANICAL SW	
6	POS3	MECHANICAL SW	
7	$\overline{\text{H. POS}}$	MECHANICAL SW	"L" when the stocker is inhome position.
8	$\overline{\text{CENTER}}$	PHOTO INTERRUPTER	"L" when the tray is in Center position. (Pick-up can be moved upward and downward). At this moment, the tray is to be closed. If T. CLOSE is in the condition of H, Center is not operational.
9	$\overline{\text{D. CNT}}$	PHOTO INTERRUPTER	Sensor detecting the disc position of the stocker "L" when the carrage enters inward from the outside.
10	$\overline{\text{D. DET}}$	PHOTO REFLECTOR	Sensor detecting ith existence of disc detectable when the tray is in Center Position. "L" when a disc exits.

MECHA SENSOR

OPEN	CLOSE	OPERATING
H	H	MOTOR STOP (BREAK)
H	L	TRAY OPEN
L	H	TRAY CLOSE
L	L	MOTOR STOP

ST.UP	ST. DOWN	OPERATING
H	H	MOTOR STOP (BREAK)
H	L	STORKER UP
L	H	STORKER DOWN
L	L	MOTOR STOP

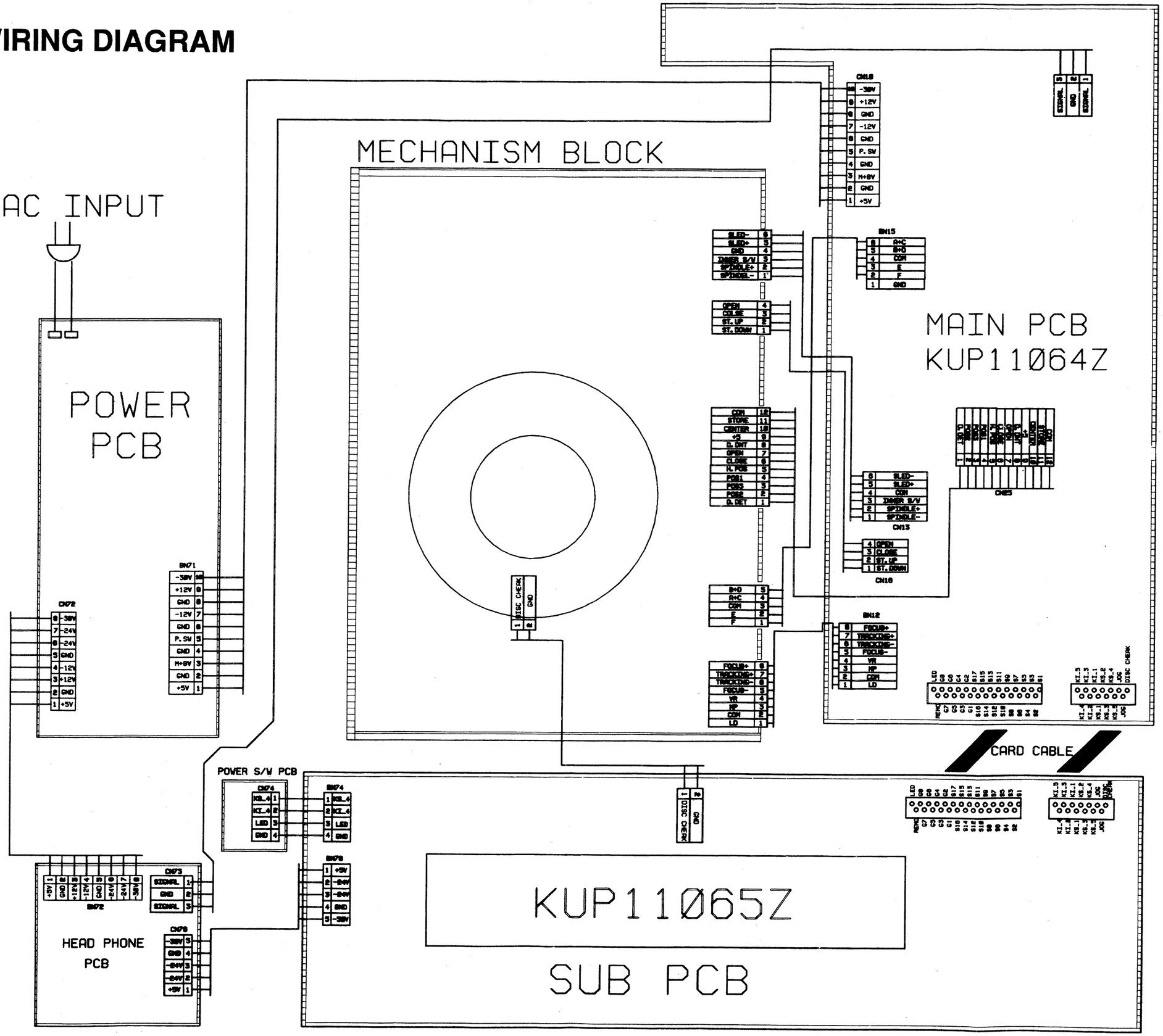

MICRO CONTROLER
CENTER
D. CNT
D. DET
OPEN
CLOSE
MOTOR DRIVE
ST. UP
ST. DOWN
MOTOR DRIVE
OPEN SW
STORE SW
CLOSE SW
PICK UP MECHA POSITION SW
HOME POSITION SW
OPEN
STORE
T. CLOSE
POS1
POS2
POS3
H. POS

IC 42 BVIANAM1233C (μ-COM, TMP87PM78F)

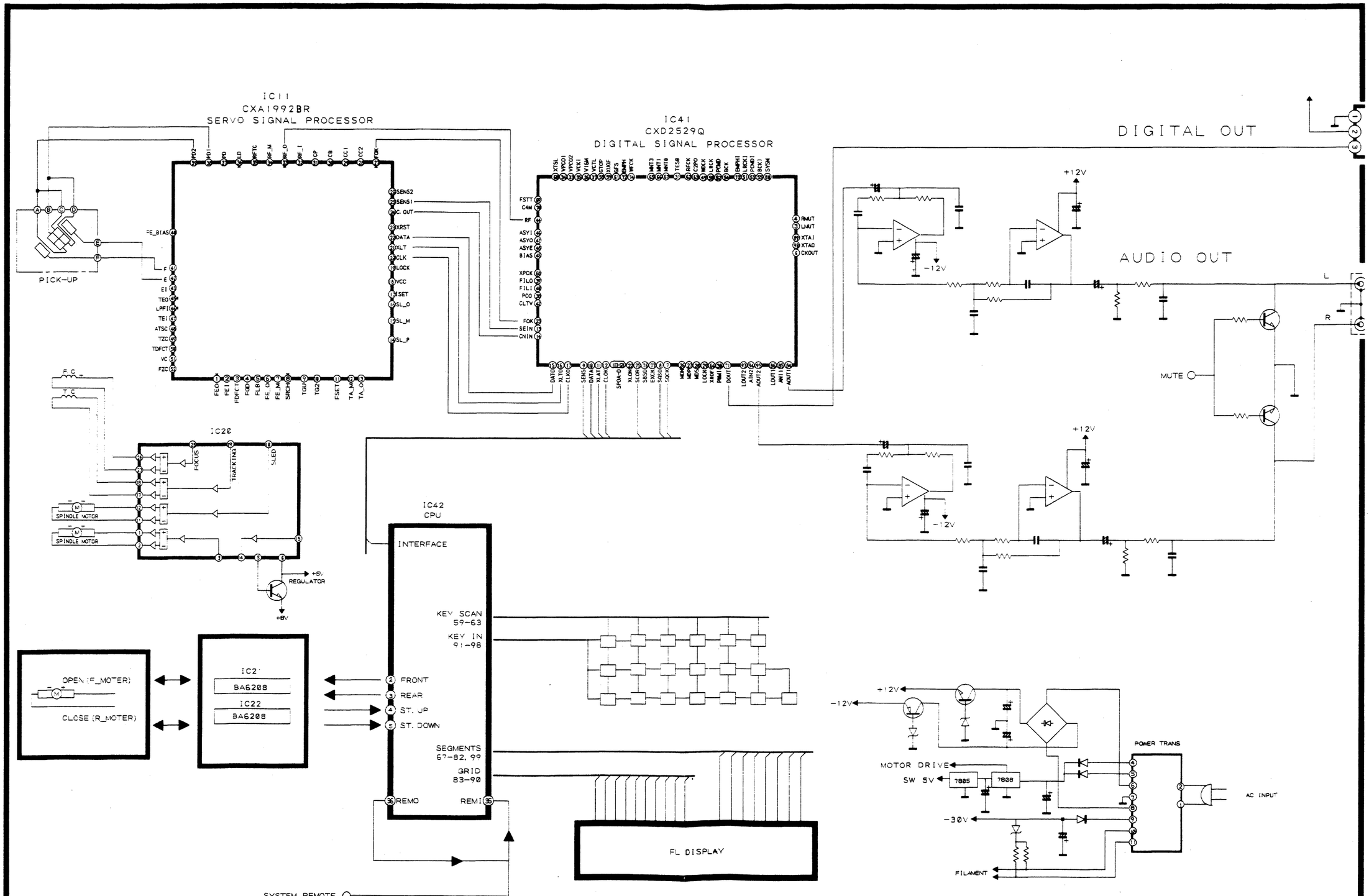
NO.	SYMBOL	I/O	DESCRIPTION
1	VDD	-	+5V POWER SUPPLY PIN
2	FRONT	O	MECHANISM OPEN CONTROL PIN
3	REAR	O	MECHANISM CLOSE CONTROL PIN
4	ST. UP	O	MECHANISM DISC CHANGE CONTROL PIN
5	ST. DOWN	O	MECHANISM DISC CHANGE CONTROL PIN
6	POWER	O	SYSTEM POWER ON/OFF PIN
7	REMOTE SELEC	I	REMOTE SELECTOR SWITCH CHEAK PIN
8	TEST	I	OPTION (HIGH=AKAI)
9	NC	-	
10	SQCK	O	SUBCODE-Q DATA CLOCK PIN
11	SQSO	I	SUBCODE-Q DATA SERIAL PIN
12	NC	-	
13	SCOR	-	SUBCODE SYNC SIGNAL (S0+S1) PIN
14	POS 1	I	POSITION 1 INPUT
15	POS 2	I	POSITION 2 INPUT
16	POS 3	I	POSITION 3 INPUT
17	D. DET	I	DISC DETECTER INPUT
18	H. POS	I	HOME POSITION INPUT
19	T. CLOSE	I	CLOSE SWITCH INPUT
20	OPEN SW	I	OPEN SWITCH INPUT
21	D. CNT	I	DISC COUNT INPUT
22	VSS	-	GND
23	VASS	-	ANALOG GND
24	VRFF	-	+5V POWER SUPPLY PIN
25	VDD	-	+5V POWER SUPPLY PIN
26	DISC CHEAK	I	DISC CHEAK ERROR CONTROL PIN
27	NC	-	
28	STORE	I	STORE SWITCH INPUT
29	CENTER	I	CENTER SENSOR INPUT
30	VSS	-	GND
31	XIN	I	SYSTEM CLOCK OSCILLATION CRYSTAL INTERFACE PIN
32	XOUT	O	SYSTEM CLOCK OSCILLATION CRYSTAL INTERFACE PIN
33	RESET INPUT	I	SYSTEM RESET PIN
34	REMOTE IN	I	REMOCON DATA INPUT PIN
35	BUS IN	I	REMOCON DATA INPUT PIN
36	BUS OUT	O	REMOCON DATA OUTPUT PIN
37	SENS2	I	SSP STATUS INPUT PIN
38	SENS	I	DSP STATUS INPUT PIN
39	COUT	I	TRACK COUNT INPUT PIN
40	MUTE	O	AUDIO MUTE PIN
41	CLOCK	O	CLOCK PIN
42	XLAT	O	LATCH PIN
43	DATA	I	DATA OUTPUT PIN
44	F. OK	I	FOCOS OK INPUT PIN

NO.	SYMBOL	I/O	DESCRIPTION
45	GFS	I	FRAME SYNC STAUTS PIN
46	DSP RESET	O	SYSTEM RESET FROM DSP PIN
47	POWER S.W	O	F.I.P FILAMENT POWER ON/OFF PIN
48	JOG A	O	SKIP DIAL CONTROL PIN
49	JOG B	O	SKIP DIAL CONTROL PIN
50	-30V	-	FIP VOLTAGE SUPPLY PIN
51	STANBY LED	O	STANDBY LED ON/OFF PIN
52~58	NC	-	
59	KS_5	O	KEY SCAN OUTPUT PIN
60	KS-4	O	KEY SCAN OUTPUT PIN
61	KS_3	O	KEY SCAN OUTPUT PIN
62	KS_2	O	KEY SCAN OUTPUT PIN
63	KS_1	O	KEY SCAN OUTPUT PIN
64~66	NC	-	
67	P1	O	FIP SEGMENT SIGNAL OUTPUT PIN
68	P2	O	FIP SEGMENT SIGNAL OUTPUT PIN
69	P3	O	FIP SEGMENT SIGNAL OUTPUT PIN
70	P4	O	FIP SEGMENT SIGNAL OUTPUT PIN
71	P5	O	FIP SEGMENT SIGNAL OUTPUT PIN
72	P6	O	FIP SEGMENT SIGNAL OUTPUT PIN
73	P7	O	FIP SEGMENT SIGNAL OUTPUT PIN
74	P8	O	FIP SEGMENT SIGNAL OUTPUT PIN
75	P9	O	FIP SEGMENT SIGNAL OUTPUT PIN
76	P10	O	FIP SEGMENT SIGNAL OUTPUT PIN
77	P11	O	FIP SEGMENT SIGNAL OUTPUT PIN
78	P12	O	FIP SEGMENT SIGNAL OUTPUT PIN
79	P13	O	FIP SEGMENT SIGNAL OUTPUT PIN
80	P14	O	FIP SEGMENT SIGNAL OUTPUT PIN
81	P15	O	FIP SEGMENT SIGNAL OUTPUT PIN
82	P16	O	FIP SEGMENT SIGNAL OUTPUT PIN
83	G1	O	PIN TIMING SIGNAL OUTPUT PIN
84	G2	O	PIN TIMING SIGNAL OUTPUT PIN
85	G3	O	PIN TIMING SIGNAL OUTPUT PIN
86	G4	O	PIN TIMING SIGNAL OUTPUT PIN
87	G5	O	PIN TIMING SIGNAL OUTPUT PIN
88	G6	O	PIN TIMING SIGNAL OUTPUT PIN
89	G7	O	PIN TIMING SIGNAL OUTPUT PIN
90	G8	O	PIN TIMING SIGNAL OUTPUT PIN
91~93	NC	-	
94	KI_5	I	KEY SCAN INPUT PIN
95	KI_4	I	KEY SCAN INPUT PIN
96	KI_3	I	KEY SCAN INPUT PIN
97	KI_2	I	KEY SCAN INPUT PIN
98	KI_1	I	KEY SCAN INPUT PIN
99	P17	O	KEY SCAN OUTPUT PIN
100	NC	-	

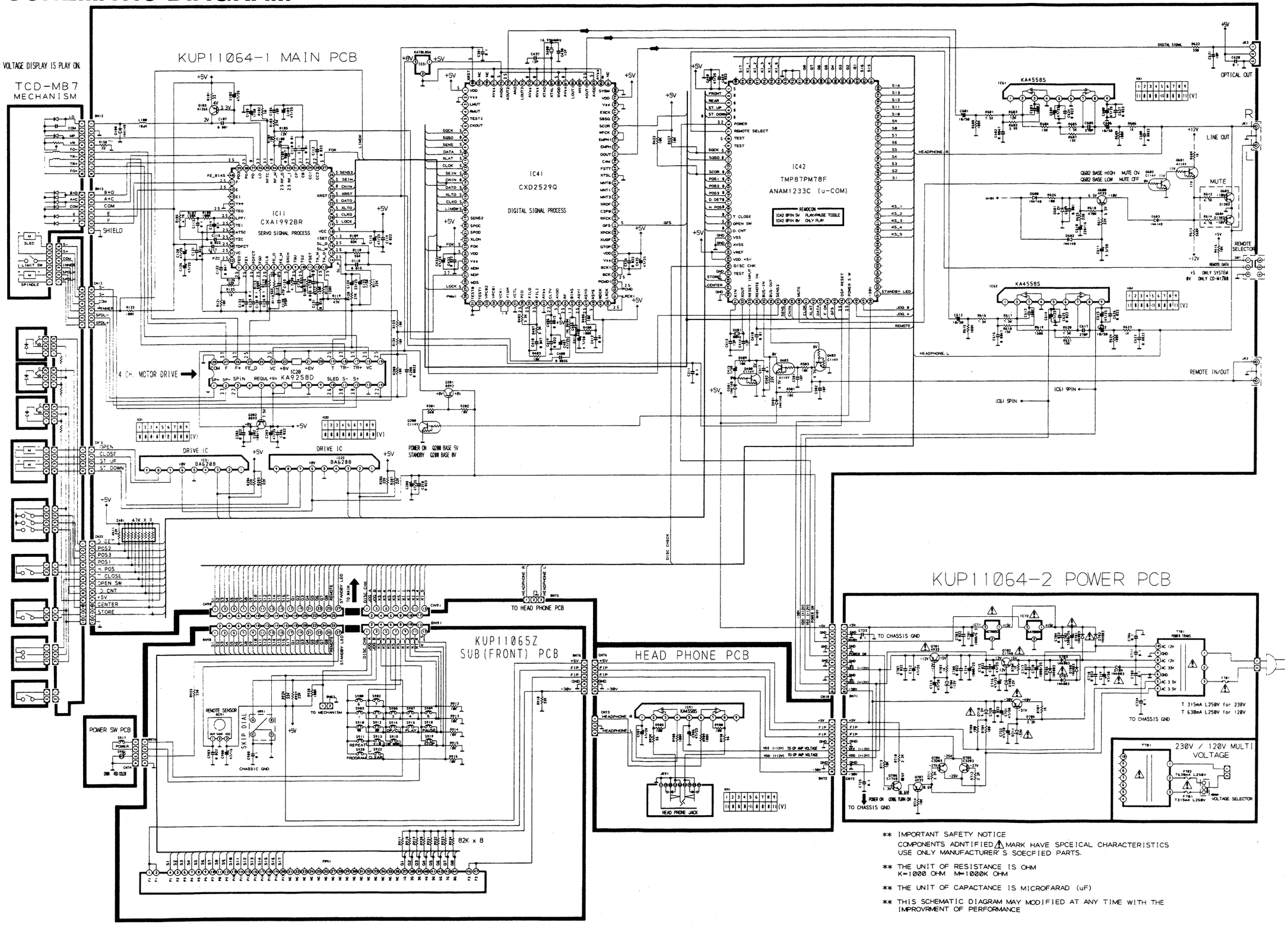
WIRING DIAGRAM



BLOCK DIAGRAM



SCHEMATIC DIAGRAM



** IMPORTANT SAFETY NOTICE
COMPONENTS ADNTIFIED ⚠ MARK HAVE SPCEICAL CHARACTERISTICS
USE ONLY MANUFACTURER'S SOECFIED PARTS.

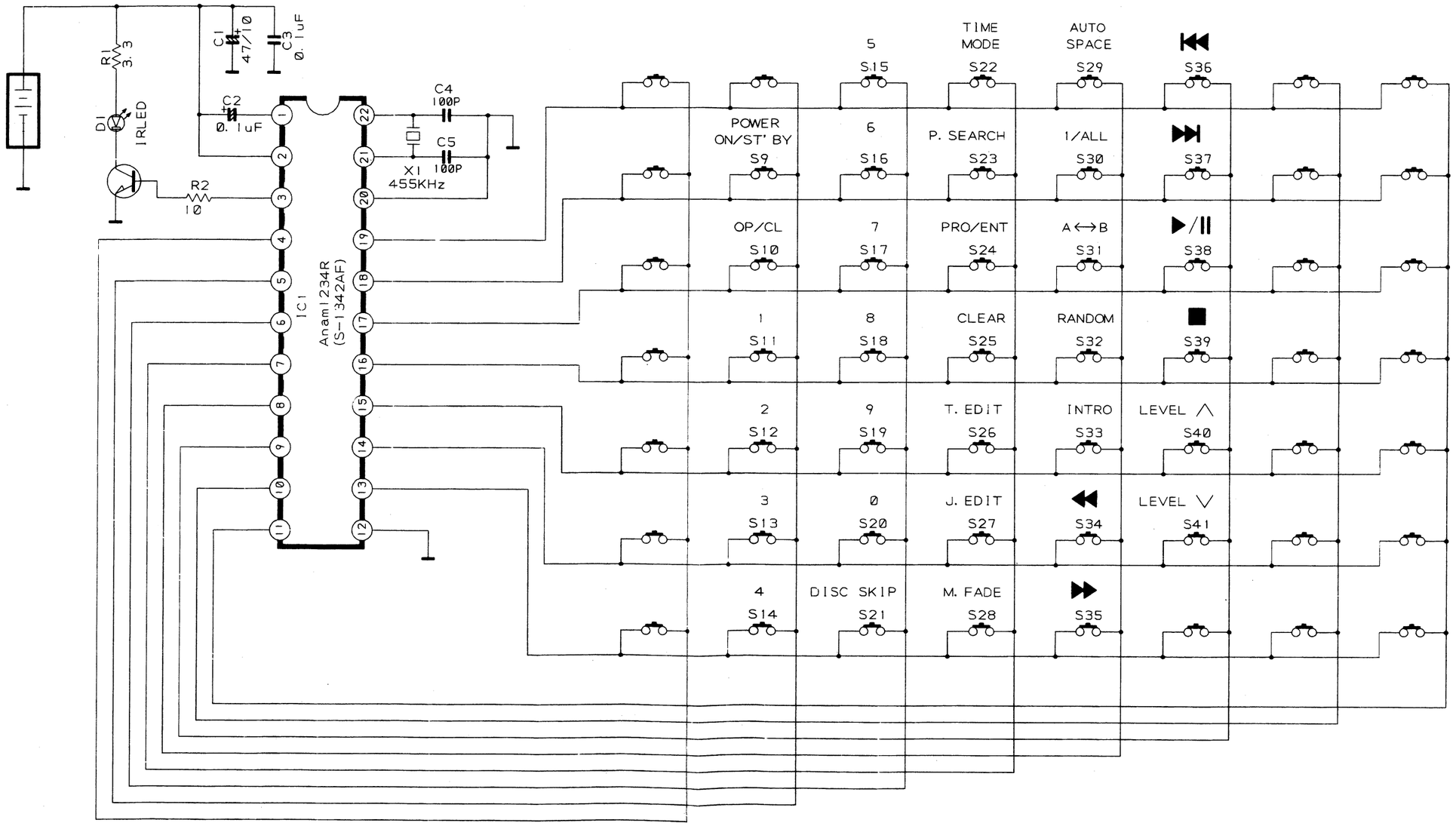
** THE UNIT OF RESISTANCE IS OHM
K=1000 OHM M=1000K OHM

** THE UNIT OF CAPACTANCE IS MICROFARAD (uF)

** THIS SCHEMATIC DIAGRAM MAY MODIFIED AT ANY TIME WITH THE IMPROVRMENT OF PERFORMANCE

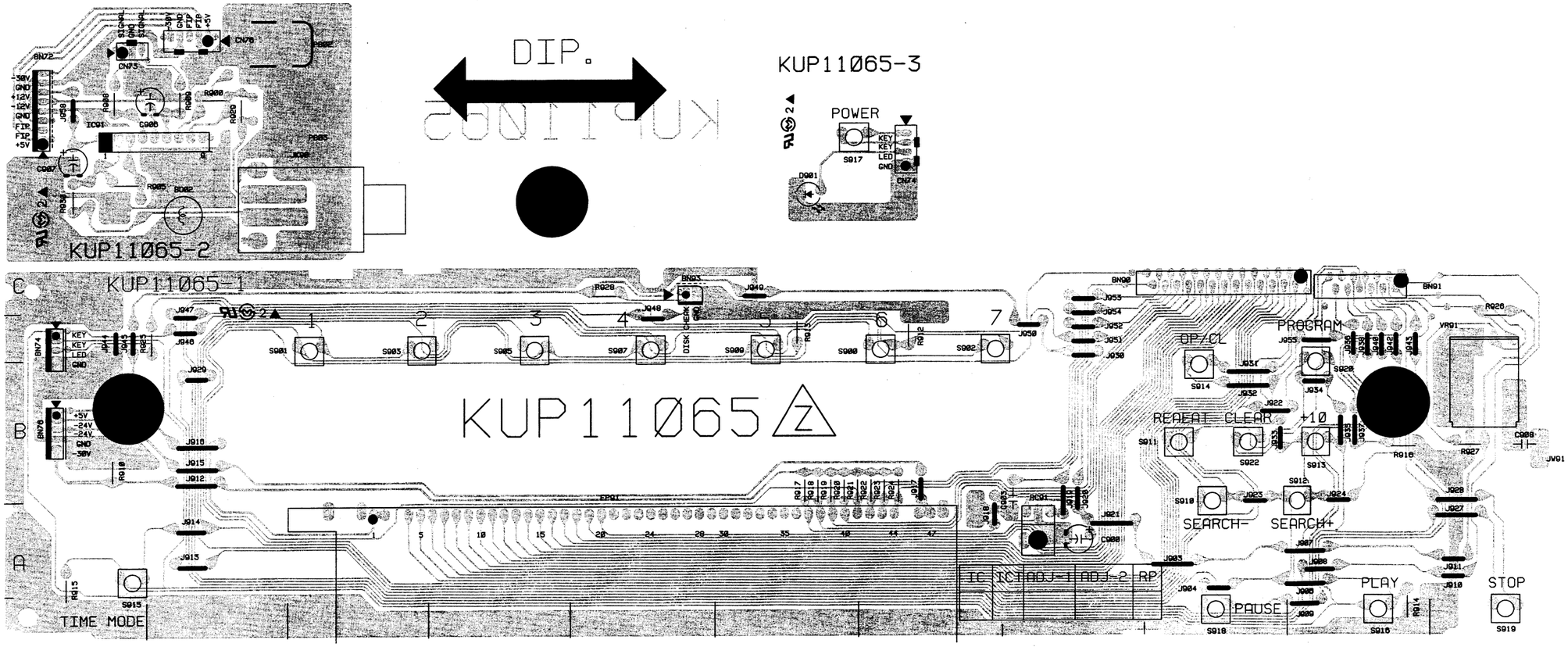
REMOTE CONTROL SCHEMATIC DIAGRAM

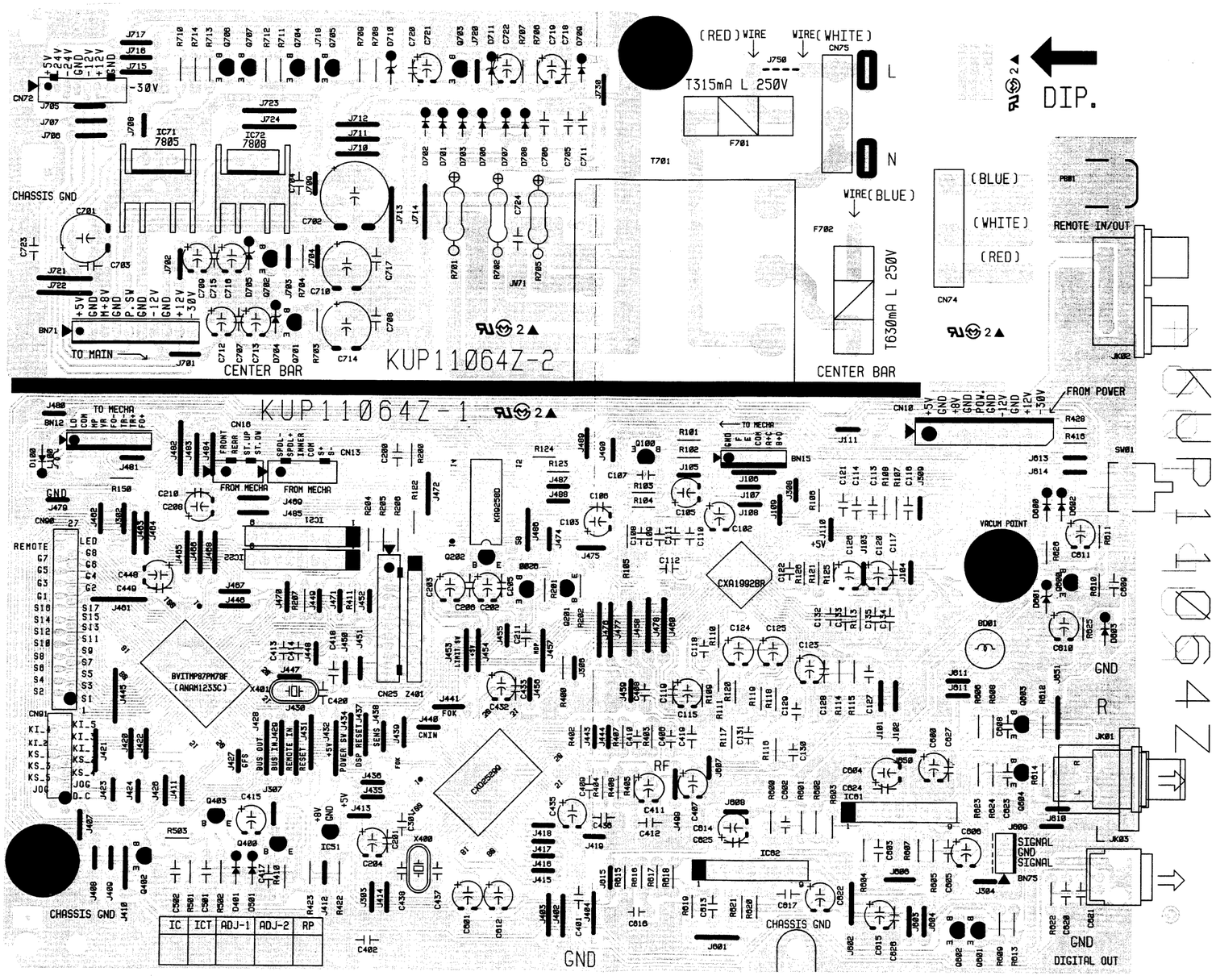
MODEL NO: RC-C1200(CD)



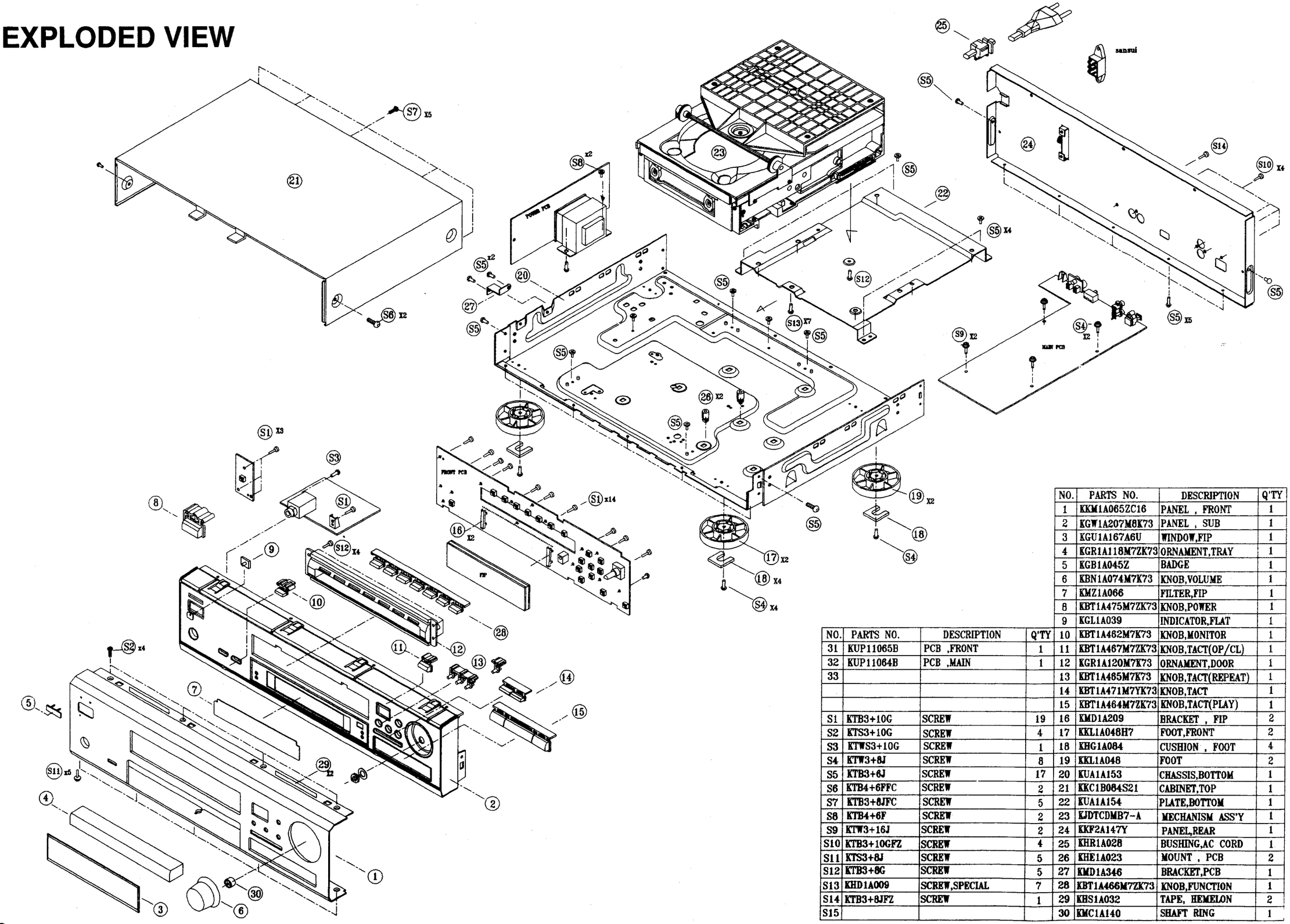
VIDE-V20985 / DRUCK4

PRINTED CIRCUIT BOARDS




KUP11064Z-2
KUP11064Z-1
CENTER BAR
CENTER BAR
CHASSIS GND
CHASSIS GND
CHASSIS GND
TO MAIN
FROM POWER
(RED) WIRE
WIRE (WHITE)
WIRE (BLUE)
T315mA L 250V
T630mA L 250V
(BLUE)
(WHITE)
(RED)
REMOTE IN/OUT
DIP.
L
N
FROM MECHA
FROM MECHA
TO MECHA
VACUM POINT
SIGNAL
GND
SIGNAL
GND
DIGITAL OUT
GND
GND
IC71 7805
IC72 7808
BVITMP87PM78F (ANAM1233C)
CXA1992BR
CXD2538Q
KRM259D
IC82
IC51
REMOTE
FROM POWER
IC | ICT | ADJ-1 | ADJ-2 | RP

EXPLODED VIEW

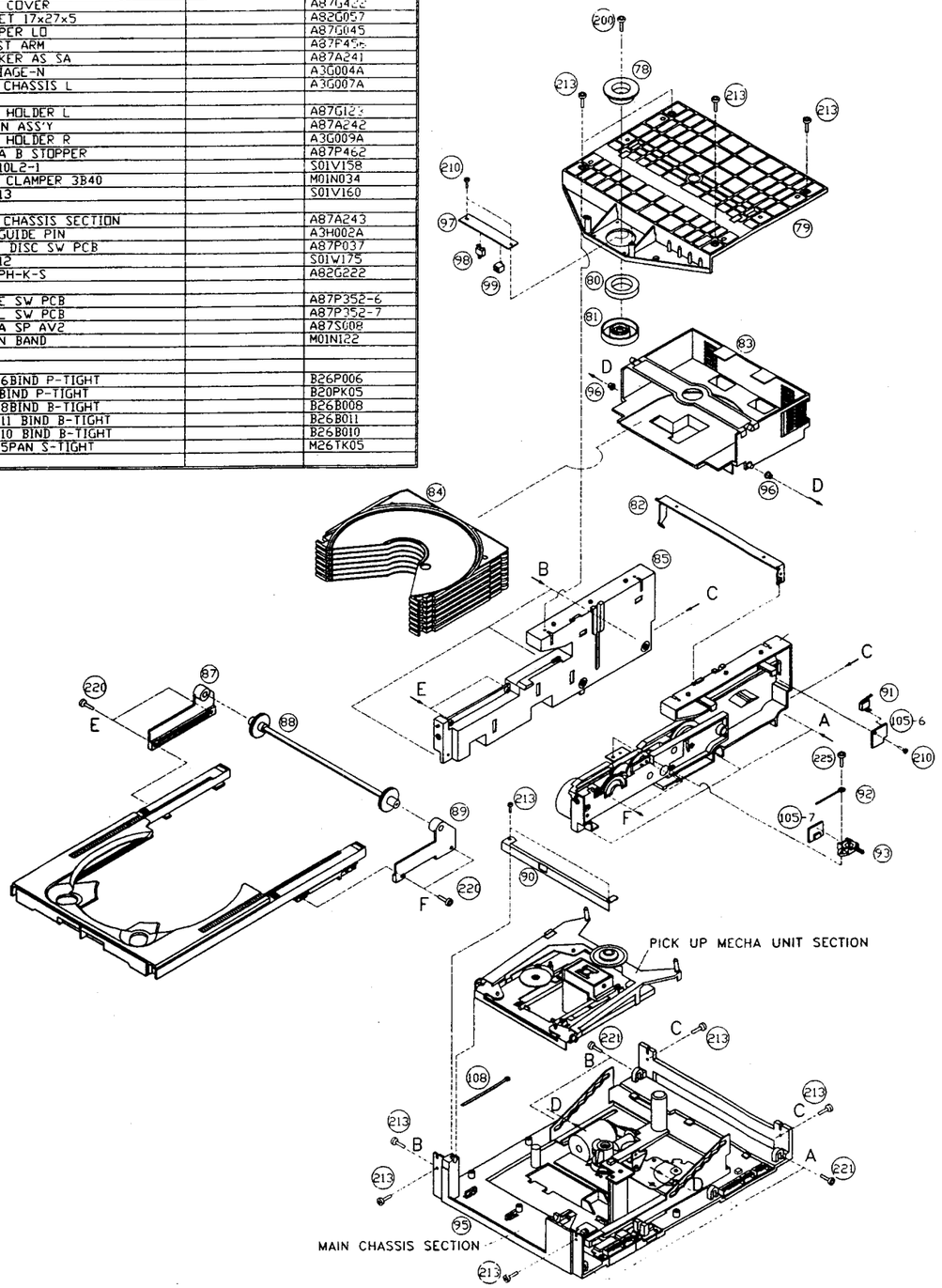


NO.	PARTS NO.	DESCRIPTION	Q'TY
31	KUP11065B	PCB ,FRONT	1
32	KUP11064B	PCB ,MAIN	1
33			
S1	KTB3+10G	SCREW	19
S2	KTS3+10G	SCREW	4
S3	KTWS3+10G	SCREW	1
S4	KTW3+8J	SCREW	8
S5	KTB3+6J	SCREW	17
S6	KTB4+6FFC	SCREW	2
S7	KTB3+8JFC	SCREW	5
S8	KTB4+6F	SCREW	2
S9	KTW3+16J	SCREW	2
S10	KTB3+10GFZ	SCREW	4
S11	KTS3+8J	SCREW	5
S12	KTB3+8G	SCREW	5
S13	KHD1A009	SCREW,SPECIAL	7
S14	KTB3+8JFZ	SCREW	1
S15			

NO.	PARTS NO.	DESCRIPTION	Q'TY
1	KKM1A065ZC16	PANEL , FRONT	1
2	KGW1A207M8K73	PANEL , SUB	1
3	KGU1A167A6U	WINDOW,FIP	1
4	KGR1A118M7ZK73	ORNAMENT,TRAY	1
5	KGB1A045Z	BADGE	1
6	KBN1A074M7K73	KNOB,VOLUME	1
7	KMZ1A066	FILTER,FIP	1
8	KBT1A475M7ZK73	KNOB,POWER	1
9	KGL1A039	INDICATOR,FLAT	1
10	KBT1A462M7K73	KNOB,MONITOR	1
11	KBT1A467M7ZK73	KNOB,TACT(OP/CL)	1
12	KGR1A120M7K73	ORNAMENT,DOOR	1
13	KBT1A465M7K73	KNOB,TACT(REPEAT)	1
14	KBT1A471M7YK73	KNOB,TACT	1
15	KBT1A464M7ZK73	KNOB,TACT(PLAY)	1
16	KMD1A209	BRACKET , FIP	2
17	KKL1A048H7	FOOT,FRONT	2
18	KHG1A084	CUSHION , FOOT	4
19	KKL1A048	FOOT	2
20	KUA1A153	CHASSIS,BOTTOM	1
21	KKC1B084S21	CABINET,TOP	1
22	KUA1A154	PLATE,BOTTOM	1
23	KJDTCDMB7-A	MECHANISM ASS'Y	1
24	KKF2A147Y	PANEL,REAR	1
25	KHR1A028	BUSHING,AC CORD	1
26	KHE1A023	MOUNT , PCB	2
27	KMD1A346	BRACKET,PCB	1
28	KBT1A466M7ZK73	KNOB,FUNCTION	1
29	KHS1A032	TAPE, HEMELON	2
30	KMC1A140	SHAFT RING	1

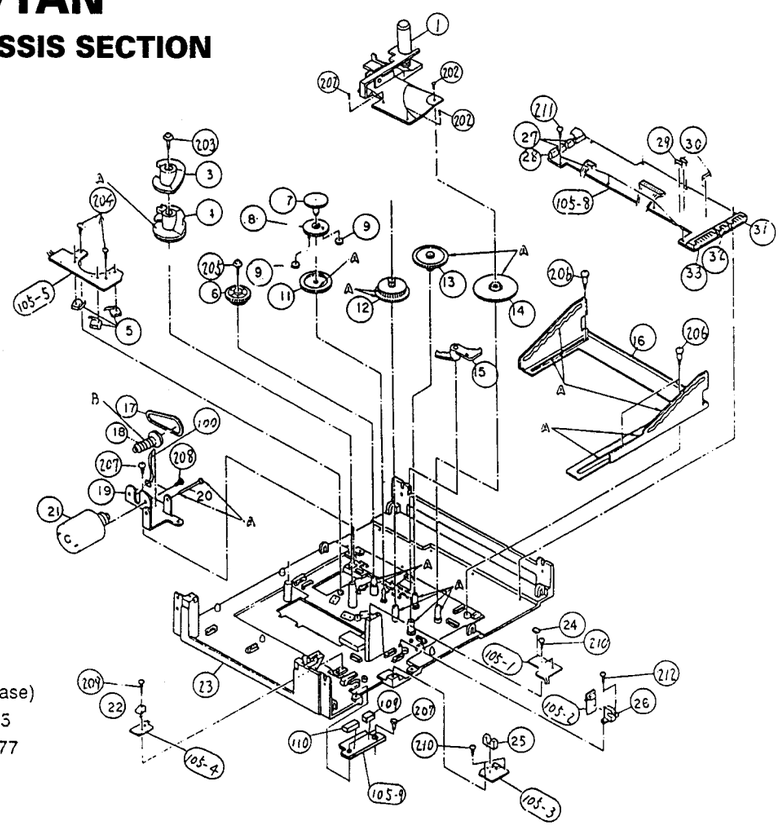
MECHANISM ASS'Y

NO	PARTS NAME	DRAWING NO	PARTS CODE
78	CLAMPER HI		A87G046
79	TOP COVER		A87G422
80	MAGNET 17x27x5		A82G057
81	CLAMPER LO		A87G045
82	ASSIST ARM		A87P456
83	STOCKER AS SA		A87A241
84	CARRIAGE-N		A3G004A
85	SIDE CHASSIS L		A3G007A
87	TRAY HOLDER L		A87G123
88	PINION ASS'Y		A87A242
89	TRAY HOLDER R		A3G009A
90	MECHA B STOPPER		A87P462
91	MSS-10L2-1		S01V158
92	CORD CLAMPER 3B40		M01N034
93	SSS-13		S01V160
95	MAIN CHASSIS SECTION		A87A243
96	STC GUIDE PIN		A3H002A
97	OVER DISC SW PCB		A87P037
98	SW-112		S01W175
99	S28-PH-K-S		A82G222
105-6	STORE SW PCB		A87P352-6
105-7	OP/CL SW PCB		A87P352-7
107	MECHA SP AV2		A87S008
108	NYLON BAND		M01N122
200	M2.6x6BIND P-TIGHT		B26P006
210	M2x5BIND P-TIGHT		B20PK05
213	M2.6x8BIND B-TIGHT		B26B008
220	M2.6x11 BIND B-TIGHT		B26B011
221	M2.6x10 BIND B-TIGHT		B26B010
225	M2.6x5PAN S-TIGHT		M26TK05



TCD-MB7TAN

1. MAIN CHASSIS SECTION

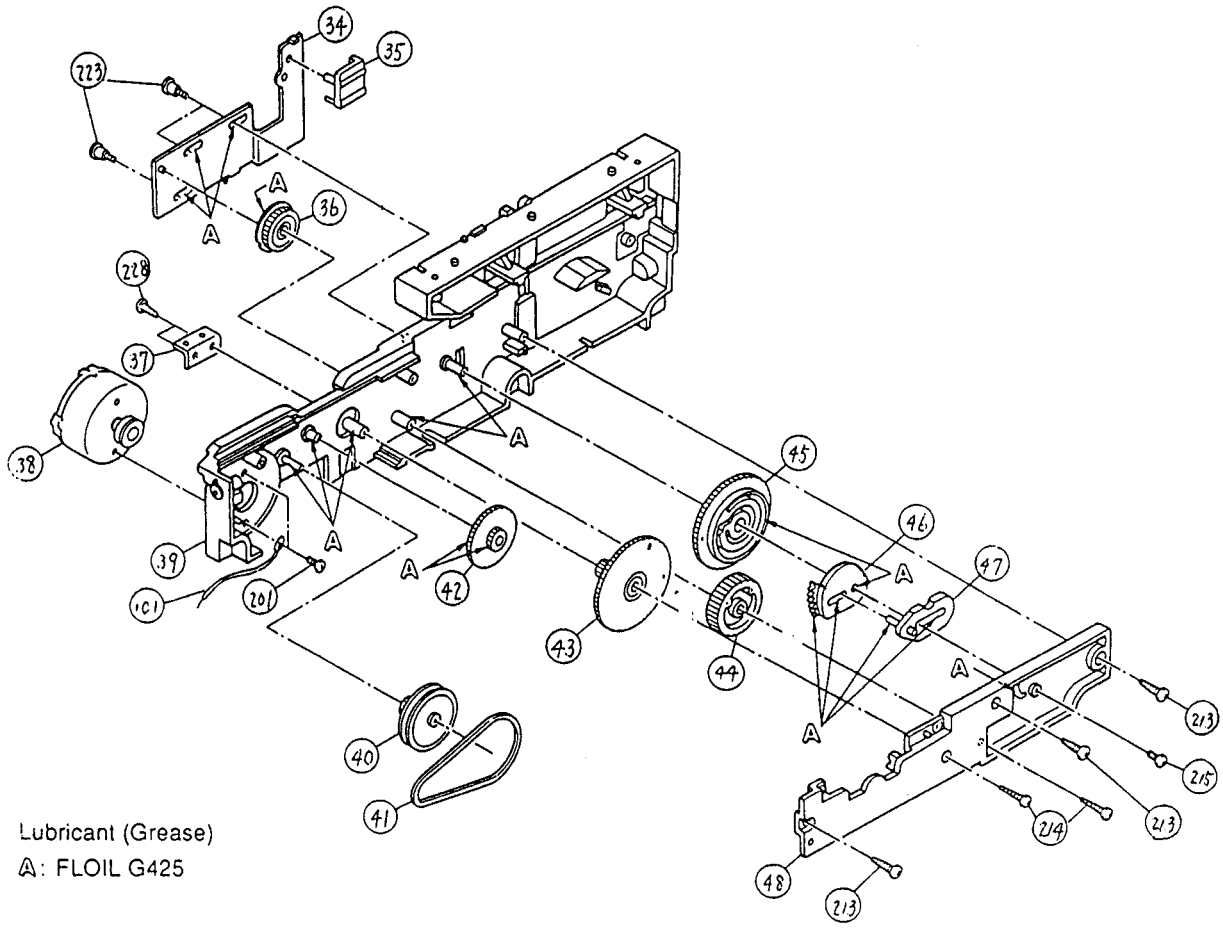


Lubricant (Grease)
Ⓐ: FLOIL G425
Ⓑ: FLOIL FL777

No.	PARTS NAME	DRAWING NO.	PARTS CODE
1	DISC LOCK ARM AS		A3A117A
2			
3	ME UD CAM TOP-N		A87G421
4	MECHA UD CAM-K		A87G427
5	MSS-10R2-16		SO1W159
6	ID-ST-GEAR		A87G033
7	D1-ST-GEAR		A3G141A
8	D2-ST-GEAR		A3G142A
9	D3-ST-GEAR		A3G143A
11	D5-ST-GEAR		A87G040
12	LOCK IDLER		A87G041
13	D7M-ST-GEAR		A87G035
14	D6P-ST-GEAR		A87G394
15	CHANGE ARM		A87G420
16	STOCKER CAM		A3P001A
17	BELT T-C		A87G014
18	ST-WORM-GEAR		A87G032
19	MOTOR BRACKET		A87P001
20	WORM SHAFT		A87H062
21	STOCKER MOTOR AS		A87A228
22	MSS-10R2-17		S01Y163
23	MAIN CHASSIS AS		A3A001A
24	GP2S40		E01L546

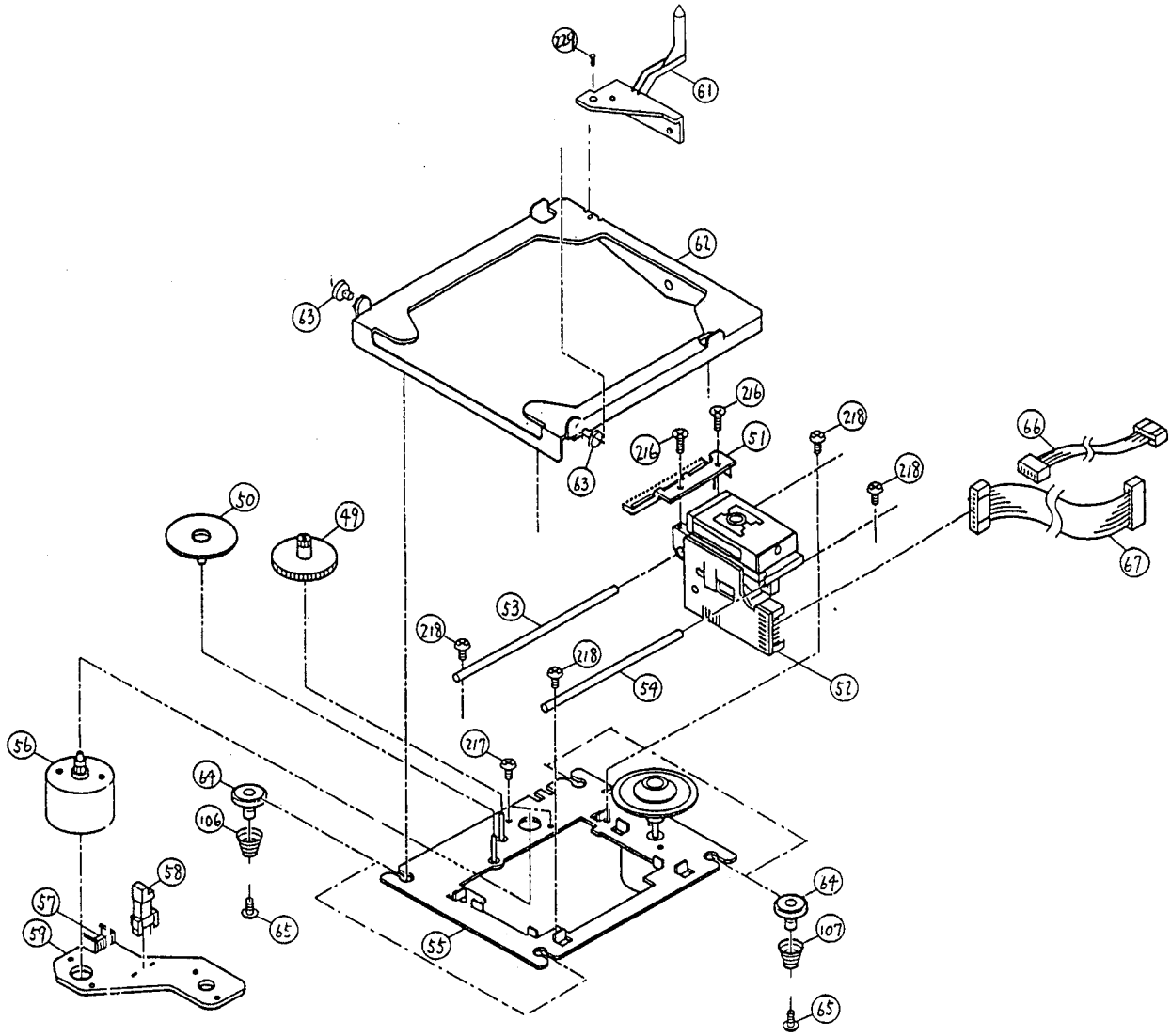
No.	PARTS NAME	DRAWING NO.	PARTS CODE
25	GP1S52V		E01L548
26	GS1S51V		E01L547
27	B2B-PH-K-S		A81G605
28	B3B-PH-K-S		A81G372
29	CR270-6		C01R270
30	CR330-6		C01R330
31	S6B-PH-K-S		A81G028
32	S4B-PH-K-S		A82G223
33	S12B-PH-K-S		A82G237
100	WIRE WITH LUG B		A87G261
105	MAIN PCB N		A3P005A
105-1	GP2S40 PCB		
105-2	GP1S51V PCB		
105-3	GP1S52V PCB		
105-4	HOPS PCB		
105-5	CAM PCB		
105-6	STORE SW PCB		
105-7	OP/CL SW PCB		
105-8	MAIN PCB		
105-9	PV PCB		
109	S5B-PH-K-S		A82G253
110	S8B-PH-K-S		A81G030

2. SIDE CHASSIS R SECTION



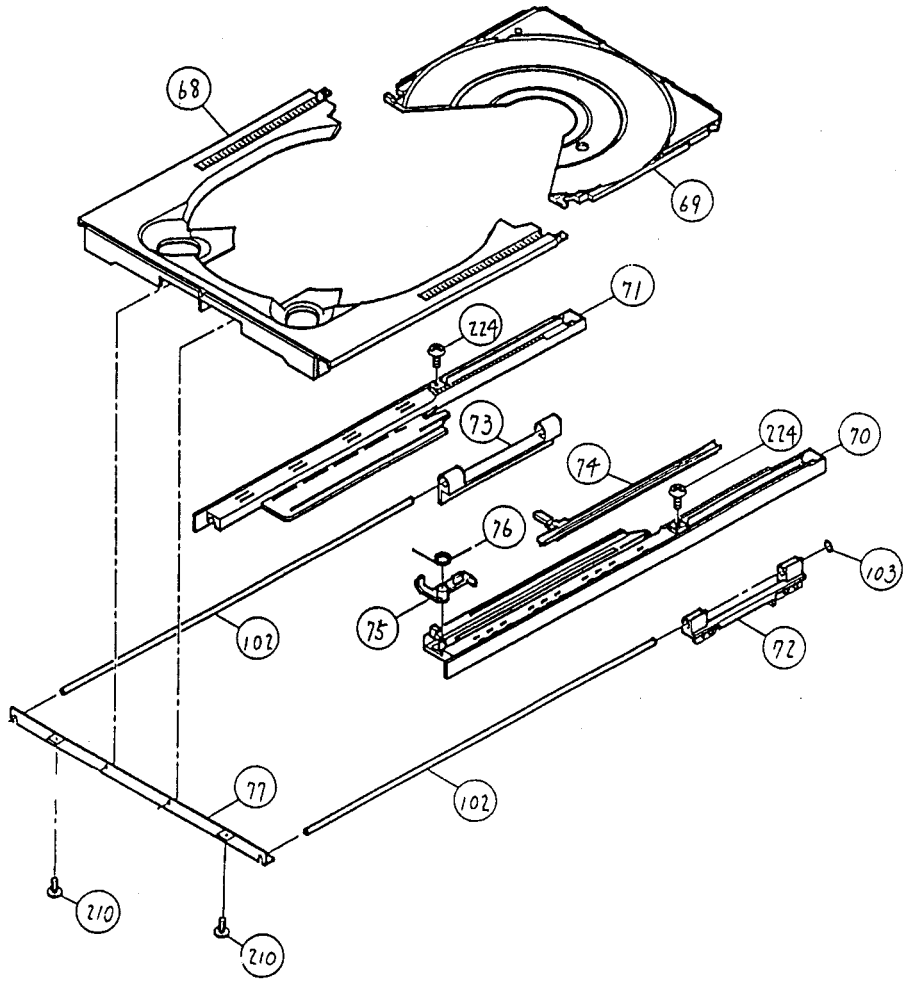
No.	PARTS NAME	DRAWING NO.	PARTS CODE
34	CHANGE PLATE AS		A871062
35	CARRIAGE OPENNER		A3G078A
36	CHANGE GEAR		A87G023
37	SW-BRACKET		A87P010
38	LOADING MOTOR AS		A87A227
39	SIDE CHASSIS R AS		A3A002A
40	S-P-GEAR		A87G010
41	BELT C-S		A87G015
42	SIDE IDLER		A87G020
43	S-F-GEAR		A3G136A
44	S-I-GEAR		A87G009
45	S-M-GEAR		A87G007
46	TRAY STOPPER		A87A298
47	TRACE ARM N AS		A87A238
48	GEAR HOLDER		A87G423
101	WIRE WITH LUG		A87G257

3. PICK UP MECHA UNIT SECTION



No.	PARTS NAME	DRAWING NO.	PARTS CODE	
49	GEAR MIDDLE		A90G038	(1EA2511A06300)
50	GEAR POWER		A90G040	(1EA2511A06500)
51	PLATE RACK		A3G096A	(1EA2731A01400)
52	PICK UP SF91PO		A90G110	(14926435)
53	GUIDE BAR B		A3H018A	(1EA2362A00400)
54	GUIDE BAR A		A3H019A	(14127519890000)
55	DISC MOTOR AS		A3A113A	
56	FEED MOTOR AS		A3A114A	
57	S6B-PH-K-S		A81G028	
58	LEAF SW BSW -333A		S01W128	(1EA4S13A00800)
59	MOTOR PCB 90VI-M		A90P073	(1EA4B10A53501)
61	MECHA BASE PIN		A3G139A	
62	SUS CHASSIS AS		A3A118A	
63	ST2-4-4 WG		A3H052A	
64	MECHA SUS AW B		A3G175A	
65	M2-3-9 AW		A3H001A	
66	CNW-W5P		A87G359	
67	CNW-W8P		A87G358	
106	MECHA SP R		A3S010A	
107	MECHA SP F		A3S009A	

4. TRAY SECTION



No.	PARTS NAME	DRAWING NO.	PARTS CODE
68	TRAY TOP		A3G015A
69	CARRIAGE S		A3G086A
70	TRAY R		A87G017
71	TRAY L		A3G090A
72	TRAY GUIDE R		A87G006
73	TRAY GUIDE L		A87G008
74	SHUTTLE		A3G135A
75	SHUTTLE LOCK		A87G021
76	SHUTTLE LOCK SP		A87S001
77	TRAY PLATE		A3P032A
102	TR-G-SHAFT-N		A87H061
103	STOP RUBBER		A87G207

PARTS LIST

ATTENTION

1. **When placing an order for parts, be sure to list the Part No., Model No. and the description of each part. Otherwise, the non-delivery of the part or the delivery of a wrong part may result.**
2. **Please make sure that Part No. is correct when ordering. If not, a part different from the one you ordered may be delivered.**
3. **Since the parts shown in Parts List of Preliminary Service Manual may have been the subject of changes, please use this Parts List for all future reference.**

HOW TO USE THIS PARTS LIST

1. This Parts List lists those parts which are considered necessary for repairs. Other common parts, such as resistors and capacitors, are listed in the "Common List for Service Parts" from which these parts should be selected and stocked.
2. Parts not shown in the Parts List and "Common List for Service Parts" will not in principle be supplied.
3. How to read the Parts List.

■ Resistor and Capacitor

Notes : · Part numbers are indicated for most mechanical parts.
Please use this part number for parts order.
· IMPORTANT SAFETY NOTICE.
Components identified by ⚠mark have special characteristics important for safety.
When replacing any of these components, use only manufacture's specified parts.
· The unit of resistance is OHM(Ω)
K=1000(Ω), M=1000(K Ω)
· The unit of capacitance is MICROFARAD(μF).
· P=10^{-6}μF

■ Numbering System of Resistor

Example

KRD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
KRD:Carbon	20:1/5W	F:=±1%
KRG:Metal Oxide	25:1/4W	J:=±5%
	50:1/2W	K:=±10%
	1:1W	
KRF:Metal Cement	2:2W	
	3:3W	

■ Numbering System of Capacitor

Example

KCKT	1H	101	K	B
Type	Voltage	Value	Tolerance	Peculiarity

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
KCB:Ceramic	OJ:6.3V	1H:50V DC	C:±0.25pF
KCC:Ceramic	1A:10V	1:125V DC	G:±2%
KCK:Ceramic	1C:16V	KC:400V AC	J:±5%
KCFR:Semiconductor	1E:25V		K:±10%
KCQI:Polyester	1H:50V		Z:+80%, -20%
KCQP:Polypropylene	1V:35V		
KCQS:Polystyrol			

WARNING

⚠ (*) INDICATES SAFETY CRITICAL COMPONENTS. FOR CONTINUED SAFETY, REPLACE SAFETY CRITICAL COMPONENTS ONLY WITH MANUFACTURE'S RECOMMENDED PARTS.

AVERTISSEMENT

⚠ (*) IL INDIQUE LES COMPOSANTS CRITIQUES DE SÉCURITÉ. POUR MAINTENIR LE DEGRÉ DE SÉCURITÉDE L'APPAREIL, NE REMPLACER QUE DES PIÉCES RECOMMANDEES PAR LÉ FABRICANT.

■ ELECTRICAL PARTS LIST

REF NO.	PART NO.	DESCRIPTION
P. C BOARD BLOCK PART NO.		
	Part No.	Description
	KOP11064B	MAIN PCB ASS'Y
	KOP11065B	SUB(Front) PCB ASS'Y
MAIN PCB BLK CONSISTS OF FOLLOWING P. C. B		
	* POWER P. C. BOARD	
	* IC Regulator P. C. BOARD	
	* VOLTAGE SELECTOR S.W P. C. BOARD	
FRONT PCB BLK CONSISTS OF FOLLOWING P. C. B		
	* SUB P. C. BOARD	
	* HEADPHONE P. C. BOARD	
1. MAIN PCB		
BN12	KWZCDM1200BN12	WIRE ASS'Y
BN13	KWZCDM1200BN13	WIRE ASS'Y
BN15	KWZCDM1200BN15	WIRE ASS'Y
BN16	KWZCDM1200BN16	WIRE ASS'Y
BN25	KWZCDM1200BN25	WIRE ASS'Y
BN71	KWZCD1200BN71-1	WIRE ASS'Y
BN75	KWZCDM1200BN75	WIRE ASS'Y
D100, 104	KVD1N4148T	DIODE
D501, 600		
D601	⚠ KVDMTZJ6.2BT	DIODE, ZENER(6.2V)
D602, 603	KVD1N4148T	DIODE
D701~703	⚠ VKD1N4003SR	DIODE
D704, 705	⚠ KVDMTZJ12BT	DIODE, ZENER(12V)
D706~D709	KVD1N4003SR	DIODE
D710	⚠ KVDMTZJ6.2BT	DIODE, ZENER(6.2V)
D711	⚠ KVDMTZJ33BT	DIODE, ZENER(33V)
IC11	BVICXA1992BR	IC (SSP)
IC20	KVIKA9258D	IC (MOTOR DRIVE)
IC21, 22	KVIBA6208	IC (DRIVE)
IC41	BVICXD2529Q	IC (DSP)
IC42	BVIANAM1233C	IC (μ-COM)
IC51	KVIKA78L05A	IC (Regulator, +5V)
IC61, 62	KVIKIA4558S	IC (OP, AMP)
IC71	⚠ KVIMC7805C	IC (Regulator, +5V)
IC72	⚠ KVIMA7808A	IC (Regulator, +8V)
L100	KLQ02C100KT	COIL
Q100	KVTKTA1260YT	
Q200	KVTDTC114YST	
Q201, 202	BVT2SB892T	
Q403	KVTDTA114YST	
Q600	⚠ KVT2SA933SRT	
Q601	KVTDTA114YST	
Q602	KVTDTC114YST	
Q603, 604	KVTKTD1302T	
Q701	⚠ KVT2SA933SRT	
Q702	⚠ KVT2SC1740SRT	
Q703	⚠ KVTKSA916YT	
Q704, 705	KVTKTC3203YT	
Q706	⚠ KVT2SC1740SRT	
Q707	⚠ KVT2SA933SRT	

REF NO.	PART NO.	DESCRIPTION
C102	⚠ KCEA1EH332E	CAP, ELEC
C710, 714	KCEA1EH102E	CAP, ELEC
JK01	KJF1096ZB-K	AUDIO JACK
JK02	KJJ4N010Z	REMOTE JACK
JK03	BJS9L001Z	OPTICAL, MODULE
T701	⚠ KLT5M012YW	TRANS, POWER FOR [E/B/S/U]
T701	⚠ KLT5M012YU	TRANS, POWER FOR [U.S.A/CANADA]
F701	⚠ KBA2C0315TLE	FUSE FOR [E/B/S/U]
F702	⚠ KBA2C0630TLE	FOR [U.S.A/CANADA]
	KJP2B019Y	POWER CORD
	KJP2E023Z	POWER CORD FOR[B]
2. FRONT PCB		
BN74	KWZCDM1200BN74	WIRE ASS'Y
BN76	KWZCDM1200BN76	WIRE ASS'Y
BN90	KJP27BA001ZG	CONNECTOR
BN91	KJP13BA001ZG	CONNECTOR
BN93	KWZCDM1200BN93	WIRE ASS'Y
D901	KVD342VCF02T085	L.E.D (RED)
RC91	BRVPIC12043	SENSOR REMOCON
VR91	BSR2A008ZU	ENCODER
S900~S922	BST1A014ZT	TACT, SW
FP91	BFLFIP8DRM7	F.I.P
IC91	KVIKIA4558S	IC, (OP AMP)
3. OTHERS		
	⚠ BJDTCD-MB7	MECHANISM
	KUR042ZA	REMOCON ASS'Y
	KWC1C4A13B150B	CARD CABLE
	KWC1C4A27B150B	CARD CABLE

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